

Using heatmaps for conversion rate optimization

Discover how
heatmaps
can help maximize
your website's
effectiveness

IMPROVE
your page design

ACHIEVE MORE
of your website goals

UNDERSTAND
how your users behave



CONTENTS

Introduction	4
What are heatmaps?	5
How do heatmaps help with conversion rate optimization (CRO)?	7
How many kinds of heatmaps are there?	9
How are heatmaps generated?	10
How to get started with heatmaps	12
What will a good heatmap tell you?	14
Can you refine your heatmaps?	16
What kind of issues will heatmaps flag up?	18
Managing heatmaps on different devices	20
Using heatmaps on more complex pages	21
Can heatmaps help with search engine optimization (SEO)?	22
20 top tips to boost conversions for CRO	23
What's next after heatmapping?	25
What heatmapping tools are available?	26





INTRODUCTION

When you've invested in a website, then getting people to visit that website – especially if it's your primary way of doing business – is critically important.

But the story doesn't end there. What those people actually *do* on your website is just as important. Can they find what they want? Can they do what they want to do, or do they run into problems? On completing their visit, do they feel satisfied – or disappointed? And how does that feeling affect their overall view of your brand?

Not too long ago, there was no way to find out how people engaged with a website. No way to see how they came to it, what they did when they got there, what problems they encountered, or when and why they left.

Now, however, a range of software tools exists to help you. One of these tools is called heatmapping, and it can show you what users are doing on each individual page: where they click and how far they scroll, for example.

Heatmaps can provide vital insights into how users behave, and where you might have technical issues you weren't aware of. As a result, you can redesign or repair your pages so that your user has a positive experience and your own business opportunities are maximized.

If you're not yet very familiar with heatmaps, this guide will help. We'll take you through what they do, how they do it, and how they can make websites more effective for everyone.

WHAT ARE HEATMAPS?

In 1991, Cormac Kinney developed a software program to help securities traders beat the market. The program created huge virtual chessboards, with one tradable security on each square. If that security's price (or any other metric, such as volatility) fell during trading, its square turned red. If it rose, on the other hand, the square turned blue. Traders could very quickly see where changes in the market demanded action, or where opportunities presented themselves.



Although this kind of display had been around for a while, it had remained within the statistical and scientific communities. Kinney brought it into the light, gave it a name ('heatmap') and trademarked it. He had exploited the fact that the human eye can spot differences in color more easily than it can compare numbers – an insight that, incidentally, enabled him to clean up on Wall Street.

What do heatmaps do?

The reason heatmaps are popular, of course, is that they aggregate very large amounts of data and transform them into simple, immediate visual representations.

Typically, a heatmap will show spots of activity or engagement. These are usually portrayed in red, fading through orange and yellow to 'cooler' areas in green and then blue. Some heatmaps are portrayed in grayscale, and some will instead move through red to 'white-hot' areas.

The point is that the eye is immediately drawn to the hotter areas – and, depending on the purpose, possibly also the cooler areas. These are the most extreme data points: they shout the loudest for our attention. And that's the whole point of heatmaps: being told where to look.

Who might use heatmaps?

Almost anyone! We're all familiar with heatmaps now, because they're such a popular tool. They can help us to understand all kinds of information, varying in sophistication:

- ☑ Weather forecasters produce literal heatmaps, showing how temperatures vary across a region.
- ☑ Football clubs use heatmaps to show the behavior of players in possession of the ball.
- ☑ Heatmaps can show you where energy is escaping from your home.
- ☑ Governments use heatmaps to show the distribution of, say, diabetes, illiteracy or crime.
- ☑ Heatmaps can show changes in gene expression following chemotherapy in cancer patients.
- ☑ A choropleth heatmap can show election results by municipality.
- ☑ And, of course, heatmaps can show you how people interact with your website.



What can a webpage heatmap tell you?

There are different kinds of heatmap, each showing you hotter and cooler areas of visitor activity. In an ideal world, you should be able to predict exactly where the warmer and cooler areas would be, according to how you've designed your webpage.

But it doesn't always work out that way. What if there's very little user activity around a button you consider really important – so it's cool where it should be hot? Or what if there's a lot of activity where users are trying to click on an unclickable page element – hot when it should be cool? These are just a couple of simple examples to show you how heatmaps can highlight technical and user-experience (UX) problems for you to resolve.

How important are webpage heatmaps?

Heatmaps offer immediate visual appeal and a lot of useful information. They can provide richer insight than traditional web analytics tools alone. They're a great way to get into understanding how and why to optimize your website, and will remain a helpful tool.

However, it's worth noting a few points:

- ✔ They're all about the extremes, rather than the middle ground.
- ✔ Heatmaps point out where on the page a problem exists, but usually leave it to you to interpret why.
- ✔ Just because a user is dwelling or clicking in an area doesn't mean they're engaged with that area. They might be looking at something away from their cursor; they might be absent-mindedly clicking on an image while chatting on the phone.
- ✔ Unless you use one of the higher-quality heatmapping tools, you might not be looking at what you think you're looking at. For example, in this guide we'll talk about varying browser widths, expand/collapse states, and single-page applications – all examples of where you need to be careful.

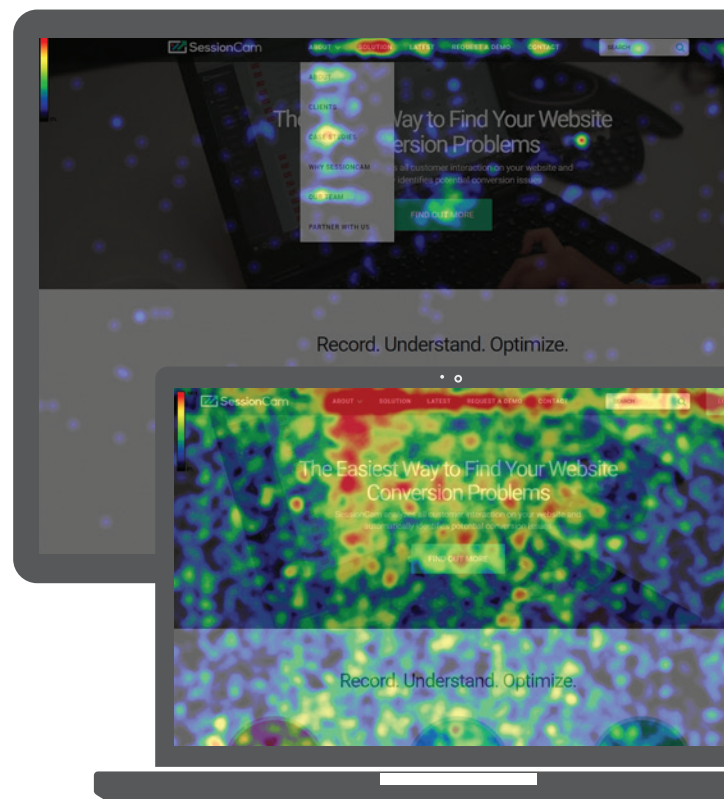
Is a heatmap all you need?

It's important to see heatmaps as just one tool in a box that should also contain industry standards such as Google Analytics, for example, plus a range of A/B testing tools, session recording tools, and more.

The more sophisticated products in this field offer a comprehensive suite of features of their own. Rather than replicating what's available in other products, they instead integrate *with* those other products. Some even offer smart algorithms that assess and prioritize the biggest problems on your website.

"It's very quick and easy to get up to speed with heatmaps. Since they're so visual, they offer an intuitive way to understand user behavior."

Naomi Law, UX Specialist, Deckers EMEA



HOW DO HEATMAPS HELP WITH CRO?

Conversion rate optimization (CRO) is the science of continually making your website work harder for you. It's not enough to have a great website; your website has to keep getting greater all the time. After all, your existing competitors are busy fine-tuning their own user experiences online, and new competitors are always emerging.

As much as you may have invested in your website, all kinds of things could be adversely affecting users' interactions with it. Many of these are within your control, so it's crucially important to identify and fix them. These adverse factors might be stopping your users from reaching the 'conversion goals' you set for them, like completing a sale or asking for a call-back.

If these problems aren't addressed, you could be missing out on revenue (or other gains) while also wasting the money you spent on advertising and promotion to get users interested in the first place. If you're losing customers who came to your website ready and willing to spend money with you, but then were prevented from doing so, that's a major problem. And the cumulative effect? You could lose sales, market share, and aspects of your reputation.

Heatmaps are an important tool in finding and repairing these problems so that you can reach your 'conversion goals'. So let's take a closer look at what conversion goals are.

What is a conversion goal?

Your conversion goals are simply whatever you want your customers to do on your website. You may have multiple goals. You may want your user to:

- Complete a purchase
- Request a call-back
- Read your terms and conditions
- Provide their email address
- Download an app or a document
- Play a video

- Subscribe to a trial period
- Respond to an advertiser
- Share something on social media.

Every conversion goal has its own 'conversion funnel'.

What is a conversion funnel?

The steps that lie between the user starting the process towards a conversion goal, and **successfully completing** that goal, lie within the 'conversion funnel'. And heatmaps can show you what the user is doing on that journey.

There's a conversion funnel for every action you want your website visitor to take, whether that's fairly passive – such as reading some text – or active, such as making a purchase.

A funnel can be thought of as a pipeline, but it's funnel-shaped because more users start the process than complete it: it's widest at the top. In a perfect world, it would be a straight pipe rather than a funnel: the same diameter at the bottom as at the top, with the same number of users both starting and completing the journey.

Therefore, it's important to keep working on straightening out your conversion funnels. Straightening them means losing fewer people at each step along the journey. The straighter your funnel, the fewer barriers lurk within it to prevent your users from popping out successfully at the other end. A straighter funnel means a better brand experience for your users, and less hassle and cost for you – because you'll lose fewer sales, you'll field fewer calls and emails from irritated users, and you'll be providing a better brand experience.

How do you know what shape a funnel is in? If your bounce rate is suspiciously high, or if you're not achieving the conversion rate you think you should, you may realize there are problems with it. You may even know exactly which pages cause most people to leave your website. You may know all of this – but you still don't know exactly what the problems are. In other words, you know **where** people leave the funnel, but you don't know **why**.



So what causes people to leave the funnel?

People leave for all sorts of reasons. Some you can influence, and some you can't:

- 1 Technical, usability and design reasons** – What if nothing happens when a user clicks a button, or if they can't find the button at all? Or if your website demands an unexpected format for a zip code, phone number or date? Or the number of items in a basket just won't update? These issues are your 'low-hanging' fruit: problems that the right software tools (such as heatmaps) can help you to identify, prioritize and correct.
- 2 User behavior reasons** – Humans are complex and unpredictable. Here's an example: if your form asks, 'Do you have a promotional code?', a user might enter 'yes' or 'no' rather than the promotional code itself – and they'll become very frustrated when they don't get their discount. But how will you know that the promotional code field was the problem? A heatmap would tell you, because the field would show up as an unusually bright red where users repeatedly clicked, typed, re-entered, and dwelt over the field.
- 3 Logistical and operational reasons** – Maybe the size of sweater the user wanted wasn't in stock. Maybe your cupcakes don't come in guava and parmesan flavour, like the user wanted. Maybe you don't deliver to the user's area. These are all issues that might be worth resolving, but you'd only need to change your website once you'd made broader changes to your business.
- 4 Users' own reasons** – Perhaps their phone rang and they were distracted; perhaps they thought twice about spending the money. Maybe they asked their partner what they thought of the sweater in their basket, and the partner didn't like it. Perhaps they were just researching your business, or maybe they're a competitor. These are things you can't really affect, and it would be a waste of your resources to try.

Effective CRO will focus on (1) and (2) above. And heatmaps will help you find your problems – otherwise, you may be left having to guess.

Guesswork isn't helpful

Without help, you won't know whether someone dropped out of your conversion funnel because of reasons to do with *them* or *you*. Or whether you could have done something to keep them... and, if so, what. But you might spend a lot of time trying to guess.

You could even try 'fixing' things based on those guesses (and potentially make things worse). There might be heated debate in the workplace as to what the real problems are, how comparatively important they are, and how they should be tackled.

Incremental wins add up

Sometimes the changes you need to make to your website are quite obvious, and you won't need help identifying them. The problem lies with all the ones you *don't* know about; they may be smaller and less obvious, but there may be significantly more of them. They offer a multitude of opportunities to make incremental improvements which, when added together, can make a huge difference.

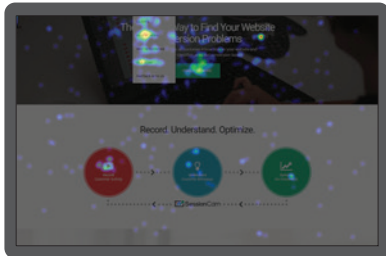
If every small improvement you make retains just 0.01% of the users who would otherwise have left each conversion funnel, you could see a substantial volume of additional income or value across the course of a year. Heatmaps can help you find where you need to make those improvements.

"We were previously using a web analytics tool, but it needed a lot of painful manual intervention. We had to insert code for every change we wanted to make – which sometimes got left out, which also led to inconsistent reporting. Thankfully, switching to heatmaps has changed all that, since the tracking is automatic."

Naomi Law, UX Specialist, Deckers EMEA

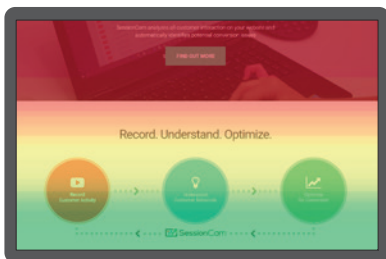
HOW MANY KINDS OF HEATMAPS ARE THERE?

You can create a heatmap for any page on your website. There are broadly four key types, and a good tool will deliver them all. They are, in general order of popularity:



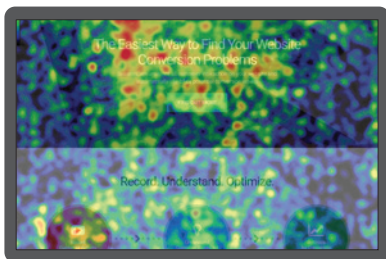
Mouse Click Activity

These heatmaps show you where users click most often (or, on a mobile device, where they're tapping). They can highlight not only the most popular links on your page, but also unclickable areas that users are trying to click on! This information is really helpful when testing your menus, promotional banners and calls to action (CTAs).



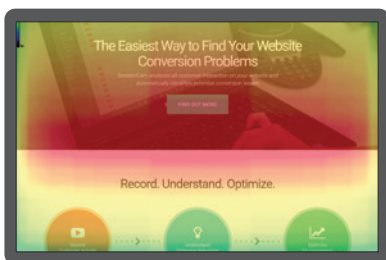
Scroll Reach

A page-scrolling heatmap shows you exactly how far down the page your users are willing to go. A big conundrum in web design centers around how much content you should show users before they have to start scrolling. For example, a big banner image may look great at the top of the page, but if it's so big that there's no other information, or reason to engage, until the user starts scrolling, might the user just navigate away?



Mouse Movement

This kind of heatmap can give you a greater insight into how a user interacts with your page. It can offer helpful information about the ideal placement of content and calls to action within the overall design. You can see what users look at, what grabs their attention, and where something causes them to stumble.



User Attention

Understanding attention is an important way to assess the effectiveness of your page design. This type of heatmap combines information about how far users scroll and how long they spend on your page. By taking account of different screen sizes and resolutions, this heatmap will show which parts of the page have been viewed the most, helping you to understand whether your most important messages are getting seen.

Just as broadsheet newspaper editors would always put their top stories 'above the fold', you need to know what to put above or below the 'fold' on a webpage. This kind of heatmap lets you see whether customers are seeing important information, and enables you to structure your page accordingly. It's particularly useful for comparing how user behavior varies between devices, and comparing, for example, the difference between scrolling on a mobile device and scrolling on a desktop.

"Of course, you can't detect causation from correlation or be 100% sure that the visitor's eyes are focused where the mouse is, but that doesn't mean heatmaps can't be helpful to data-driven marketers."

Shanelle Mullin, ConversionXL



HOW ARE HEATMAPS GENERATED?

Before we get into the technical creation of heatmaps, it's worth bearing in mind two important points:

A heatmap depends on the data – You can only generate a meaningful heatmap if it's based on enough data. For less busy sites, you may be able to get some good insights from just 1,000 user visits; on sites with high levels of traffic, you may need at least 10,000 sessions. To avoid any kind of bias, the heatmap software should select user sessions at random – on different devices, at particular times of day, etc.

A heatmap depends on your preferences – You may need to think carefully about the parameters you set for a heatmap. For example, if you ran a campaign during a particular time period, you might want to know about activity either *during* or *outside of* the campaign period, but it's probably best not to mix them.

The 4 things needed to create a heatmap

- 1 A set of sessions** for which you want to aggregate data. Typically, this involves visits to a page, filtered by a date range; the better software tools will also let you generate a heatmap for a group of filtered sessions within that period (for example, sessions on a high-resolution screen; sessions that used Chrome; or sessions performed on an iPad). A great tool will, of course, let you combine these filters.
- 2 The x and y co-ordinates** showing precisely where users clicked, or showing which pixels were revealed during scrolling, etc. This data comes from the browser, and is mapped from the top-left-hand corner of the window.
- 3 Information about the browser size** so that the x/y co-ordinates (for click, for example) make sense in their wider context – more of this on page 11.
- 4 The page over which the heatmap is displayed.** Take care here, however; can you foresee situations where your page might change *after* you collected the data for a heatmap? In which case, will the heatmap be overlaid onto the page as the user saw

it, or *as the page exists today*? It is hardly necessary to explain how confusing – and pointless – it would be to try and interpret user activity that doesn't relate to what sits on the page. More importantly, in some instances (such as financial services), it might be crucially important to capture exactly what a user saw, in order to prove what they understood or agreed to.

How the calculations are done

Let's take the example of a 'click' heatmap. Once the pixel co-ordinates have been collected for a group of sessions, showing where users clicked, those co-ordinates are mapped pixel-by-pixel across the page. (As we said earlier, this should be the page as it was seen by the users at the time, not the page as it looks today.)

At this point, your heatmapping tool needs to do some calculations, which may vary slightly according to the tool – as might the final image, since some heatmaps use red for the hottest point while some use white. But here's one typical approach:

- ☑ **Every pixel is given a 'score'**, showing how often it was clicked. The hottest point on the heatmap will, of course, be where most clicks occurred, and the coolest will be where there were few or no clicks.
- ☑ **Each of these scores is** then converted to a **percentage** of the hottest point. Therefore, if your hottest pixel results from 1,000 clicks (or 100%), then a pixel that has been clicked 333 times will have a score of 33%.
- ☑ **Next, each percentage is** converted to a **number** between 0 and 255.
- ☑ **These numbers relate** to a spectrum of **color**, where 0 is black, moving through blue to greens (with a central green at 128) and then through yellows and oranges to red at 255.



📌 **The colors within this range are then mapped,** pixel by pixel, across the browser window, with the relevant page showing through so that you can see what the user activity relates to. The better heatmapping tools will enable you to adjust the opacity of your heatmap overlay, so that you can see the page beneath more or less clearly, and to adjust the temperatures within your heatmap.

What about different browser sizes?

Yes, size does matter. Earlier on, we said that it was important to have information about the browser size, so that the x/y co-ordinates made sense in their wider context. Let's have a look at what this means in practice.

If we have an x co-ordinate of 600, showing that the user clicked at a point 600 pixels across the page, then the size of the browser window itself is going to make a big difference. (The y co-ordinate isn't important here, because websites don't generally expand and contract vertically.) For example, the screengrab on the left is of a browser window 900 pixels wide, and the one on the right is 1300 pixels wide. This makes all the difference to whether, in this instance, the user was clicking on the call-to-action button, or somewhere else:

Smarter heatmapping tools can cope with this, and will find a way to make the x co-ordinate, as reported by the browser, meaningful to you. One approach might be to work out where the horizontal centre of the browser is,

by dividing the total pixel width of the browser in half. The x co-ordinate is then subtracted from this, providing a consistent x value (regardless of the size of the browser) because it will always be relative to the center point.

What about the other types of heatmap?

The example above was based on clicking. Your software tool will adapt the above approach according to the type of heatmap required:

Mouse Movement

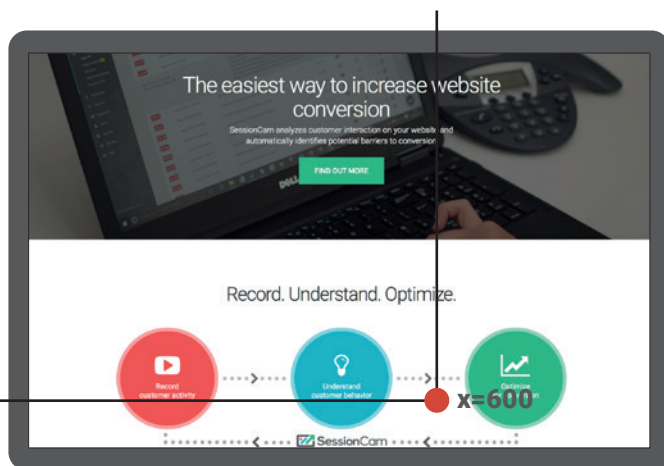
A sample of the x and y co-ordinates may be taken every so often (for example, every 200 milliseconds), and these values are plotted into the browser's grid of pixels.

Scroll Reach

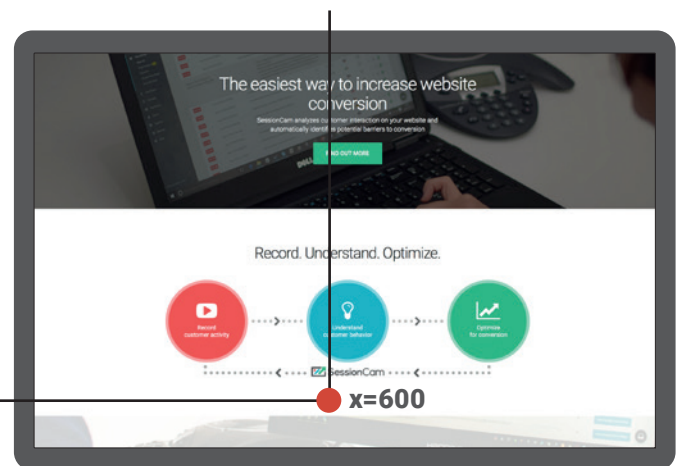
The height of the browser window is added to the highest scroll offset that the user reached on the page in question.

User Attention

Both the width and height of the user's browser, and how far the user scrolled, are taken into account – enabling a square area to be plotted, showing the area of the webpage being viewed by the user. This might also take into account the amount of time a user spent looking at the area (dwell time).



900 pixels wide



1300 pixels wide



HOW TO GET STARTED WITH HEATMAPS

Walk before you try to run

Once you've understood how heatmapping works in principle, you'll want to start exploring. Although heatmaps are actually very easy to produce, the two keys to using them well are:

- ✔ Gathering information that you can meaningfully use (you need enough data, but conversely you don't want to drown in it)
- ✔ Correctly interpreting what the heatmaps tell you, so you can make the right decisions.

Therefore, don't rush it. Build your understanding in layers, moving on only when you've mastered each level. If you try to look at your whole website at once, for example, you'll soon feel overwhelmed. Start with a page you know well, and that matters to you, and that gets enough traffic to generate a meaningful heatmap. How about the product page for your best-seller?

Get everyone talking to each other

Don't let heatmapping be a tool that just one team gets to use; you need buy-in from everyone whose work feeds into or out of your website. Furthermore, you need everyone's insights, ideas and interpretations. So make sure your marketing, planning, user experience (UX), development, testing and support teams are all up to speed with heatmapping and what it can do for you.

Start with what you already know or suspect

Do you already have some ideas about what might be affecting your conversions? You could plan to begin by testing some simple hypotheses. For example, your sales figures, customer contact centre, live chat service and website feedback forms can provide invaluable information from your own users. Are your sales on mobile devices at the level they should be? Are your support calls flagging up some common issues? Are users asking for a feature that is already on the site – but they just haven't seen it?

Understand how users arrive, journey and depart

Use a tool like Google Analytics to familiarize yourself with the key landing pages on your site. Relatively few people will see your homepage first, so what are the main pages that users land on first, and why? What are the pages most users leave from... and what pages are they seeing most commonly in-between? Are these the kind of journeys you want them to be making, or are users doing something else entirely?

While you're doing this, have a look at your bounce rates, essentially you're looking for those users who land on one of your pages, don't do much, and then exit your site without visiting any other pages. Not only do you want people to engage more with your site, but high bounce rates can be detrimental to your search rankings.

Identify some conversion funnels

If you aren't already conversant with conversion funnels, analytics can help you to identify the paths which users take to travel through your site. You can track them from arrival on your site until they reach key moments – such as completing a form, making a sale, or providing an email address. From the moment they land on your site to the moment they complete your goal, find out which pages users visit, and what steps they need to take to reach that goal. Now you have a conversion funnel.



Think about what a good conversion funnel looks like

For each page in your chosen conversion funnel, decide on your ideal scenario:

- Q Where does the page sit in the funnel – where should users have come from, and where do you want them to go next?
- Q How important is each page in the funnel to the attainment of your goal? What is its order of priority within the funnel?
- Q What do you want the page to achieve?
- Q Are you more concerned with the page conveying information, or appealing to the emotions?
- Q What do you want users to do while they're on the page? What are the essential interactions?
- Q Where do you want them to click – and which is the most important click on the page?
- Q How likely are users to escape the funnel from this page?
- Q What sort of content or problems could potentially cause users to exit from this page?

Produce a heatmap

Start by producing a heatmap for the last page, or stage, right at the end of your chosen funnel. This is where drop-out is most worrisome and needs the most attention; after all, the user has shown commitment to get there, so you really don't want to lose them at the last moment! A click heatmap might be a good one to start with, as it gives some very immediate information.

After you've made some improvements to the end of your funnel, allow a sensible period of time to elapse and then run the same heatmap to see whether things have improved.

Then start making your way up to the top of your funnel, page by page, identifying and resolving problems as you go. Remove all the blockages you can, and 'wax' the inside of the funnel – so users can slide through it (and not out of it) as quickly and painlessly as possible!



Once you've corrected the most obvious problems on each page in the funnel, you can keep revisiting the same pages to identify and spot lesser or emerging problems. Continually fine-tune the user journey, straightening your funnel so that the number of users successfully making it to the end is always edging a little closer to the number who began the journey.

Grow in confidence

As you become more comfortable with heatmapping, you can start to:

- Interpret quirky user behavior
- Add filters and segmenting
- Use other types of heatmap for the funnel you're already working on
- Work on more funnels
- Try out some multivariate (A/B testing), using heatmaps to compare the user experience with each variant



WHAT WILL A GOOD HEATMAP TELL YOU?

Where to put the most important items

Your key messages, adverts and calls to action are critically important, and heatmaps can help you place them where they'll have the greatest impact on your conversion rate. The right location for a call-to-action button can super-charge your product and checkout pages; the wrong one can have the opposite effect. If your calls to action are too weak, or difficult to spot, users may seek other content instead – or even navigate away from your site.

What variant of a page to use

If you're doing multivariate (A/B) testing, a heatmap can tell you whether variant A, B or even C is the most effective version of your page. The only way to test this is to get a substantial number of users to try the page variants out, and for you to see how they interact with them.

Where content isn't getting seen

Users allocate 80% of their attention to content that's above the fold¹. In a perfect world, we'd like to have **everything** above the 'fold', so users never have to scroll. But that's not possible for every page, so we need to make sure that content is getting seen in the right order. Heatmaps will tell you what parts of your pages are getting seen, and what users do when they get there. Do your up-selling messages, or your call to action, appear just once – at the end of a long page? Are your crucially important third-party endorsements, like ratings and reviews, user testimonials and client lists, above or below the fold?

Where you have lifeless content

Your heatmaps will tell you where people dwell and click. If these don't match with where you **want** them to dwell and click, maybe you need to crank up your content. Are your calls to action weak and waffly? Is your main content dry and boring – or just too complicated? Would images or video liven things up a bit?

Whether your page is serious about selling

Some webpages are more suited to casual browsers, whereas some are tailored to serious buyers. If you're all about selling, use heatmaps to ensure you're doing everything possible to:

- Get your messaging into the right hierarchy
- Get your page elements in the right place
- Make your calls to action prominent, compelling, clear and frequent; ensure the user knows exactly what to do next
- Minimize the amount of work the user has to do (clicks, number of pages to visit, number of form fields to complete, etc.)
- Clear every possible blockage from the funnel



“Heatmap reports are a part of every client engagement. One of our favorite things to do is use them to understand what is important to our visitors. Seeing which navigation items are ‘hottest’ tells us which should be moved left. This also works with faceted search, telling us which selection boxes should be at the top: brand? price? style? Generate a heatmap of your FAQ pages to see what topics your website is failing to answer for visitors.”

Brian Massey, Conversion Sciences

Where you have disorganized pages

- Q Do your [heatmaps show](#) people wandering their mouse all over the place, unsure of what to look at, or do, next?
- Q Is it time to [declutter](#) and streamline your page, emphasizing the essential and removing the unimportant?
- Q Are there [too many distractions](#) – for example, do you need to ditch your sidebar or even your navigation on some crucial pages? And while you may have a great short video, do you really want to people to have chance to watch it on your payment page?

Where you have technical problems

If there's a glaring area of red over a CTA button, perhaps nothing happens when people click it (so they click repeatedly). If users are scrolling far more than expected, maybe they can't find your 'submit' button, or it simply isn't loading.

Where you need to provide better help

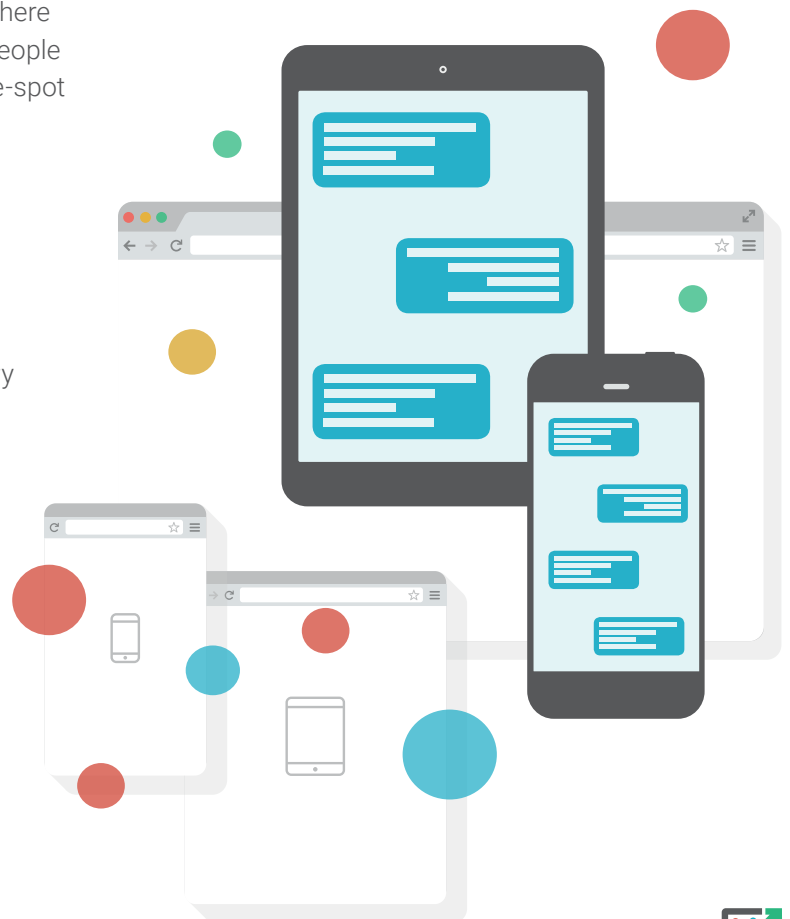
Sometimes a user knows something is wrong – but not *why*. They need a helpful error message, in a place where they can see it (not at the top of the page where they'd need to scroll to see!). Or if you know that people struggle with your forms, you could provide on-the-spot access to live chat.

Whether your page is effective with all types of browsers and devices

Not only are there a lot of variants out there, but they change all the time as updates are released. To complicate things further, users will behave very differently according to the device they're using. Heatmaps help you track technical issues as well as the quirks of human behavior.

“Before getting started with heatmaps, we used web analytics. We might have seen that people came to page B from page A, but we had no way of knowing if it was after clicking on the menu or on a banner. Now, heatmaps tell us the precise impact of content like banners, which helps to inform our marketing and our photography budget, for example.”

Naomi Law, UX Specialist,
Deckers EMEA



CAN YOU REFINE YOUR HEATMAPS?

So far, we've only talked in general terms about the different *kinds* of heatmaps. You can see where people click on a page, or how far they scroll.

But after a while, you'll start to ask yourself more detailed questions. You'll want to start drilling down according to different criteria, such as:

- Q Does the user experience differ on a mobile, compared to a desktop?
- Q Are your Android users seeing the same thing as your iPhone users?
- Q Do your page elements render correctly on Chrome devices?
- Q Which of your A/B page variants is producing the activity or UX you want?
- Q Do users behave differently on a page if they viewed a certain other page on your site first?
- Q Does user engagement differ according to the time of day?
- Q Does on-page behavior change during your sale period?
- Q Do people behave differently whether they come to your page from a social media link, an emailed newsletter, a banner advert, a PPC link, or a direct mail piece?
- Q Do certain referring URLs deliver more committed user behavior, or vague browsing?
- Q When people spend longer on the page, what are they doing?

You can see that the above questions anticipate an extra layer of complexity. We're no longer simply asking what people are doing on the page, but what they are doing when other factors are at *play*. We are starting to set parameters, such as 'only within these dates', or



'only on this device', or 'only if the user spends more than 120 seconds on the page'. This means we are starting to *filter* the information heatmaps give us.

Just as segmenting your Google Analytics data will bring you better insights, heatmaps improve significantly with the use of segmentation. For example, you could compare how converters and non-converters behave on your site. Perhaps you'll find that those who scroll deep and really dive into the product specs end up converting less often. Why might that be? That's just the beginning. The segments you can explore are virtually endless."

Shanelle Mullin, ConversionXL



Setting up filters and segments

When you ask your heatmapping tool to provide results that only fit within certain parameters, you're setting filters. You might begin with simpler filters, for example:

"Show me a click heatmap for all **Android users** who visit my 'contact us' page".

As you become more accustomed to both filtering and interpreting the resultant heatmaps, your filtering can become more sophisticated. So you might conceivably ask:

"Show me a click heatmap for **Android users** on a **Samsung Galaxy S6** who came to a certain **campaign landing page** after clicking through from a particular **social media post** between **15 and 31 March**".

The items in bold show the filters you're applying. When you start combining filters in this way, you're grouping them into 'segments', and can save the segment for future use – providing that's a feature supported by your heatmapping tool.

What sort of filters might you want to apply?

A good website heatmap tool will let you segment your data by different user groups, including those that drop off at particular points or those who convert (or don't convert) to a sale.

It can also be really useful to filter according to what users did after they visited your page – so make sure you choose a heatmap tool that lets you see a heatmap for only those users who subsequently bought, or who dropped out of the site on this page, or whose visit included viewing more than 20 pages.

Equally, you'll want to know what happened **before** users came to your page; a good tool will let you compare heatmaps for people who arrived from a marketing landing page versus the standard homepage.



What are the most popular filters?

The five most popular filters are:

- 1 Device type
- 2 Operating system
- 3 Page visited (e.g. a campaign landing page, or checkout page) or specific combination of pages
- 4 Referring URL (how did the user get here?)
- 5 Time spent on the page.

Can every heatmapping tool handle filtering?

Your ability to set filters and segments will depend on the capabilities of your heatmapping tool. Of course, one gets what one pays for; if you choose a free or basic heatmapping tool, your ability to filter may be restricted, or you may need to upgrade to perform anything more than the most basic filtering. More professional tools will deliver much smarter and more extensive filtering and segmenting capabilities.

"When you begin looking at and comparing segmented heatmaps, you'll uncover hints of new, unexpected insights that you can then confirm and explore with other forms of conversion research."

Shanelle Mullin, ConversionXL



WHAT KIND OF ISSUES WILL HEATMAPS FLAG UP?

What heatmaps can reveal

Here's just a small sample of the kind of things heatmaps can help to illuminate:

- ✔ What interests users the most?
- ✔ How much are they reading; are they willing to scroll?
- ✔ Are they trying to do something, but failing, like clicking on an unclickable page element?
- ✔ Are there parts of the page that users just don't notice?
- ✔ Are users getting distracted by too much content?
- ✔ Is content loading in an unformatted way, because the CSS is broken?
- ✔ Are users failing to spot your CTAs – or the CTAs in certain page locations?
- ✔ Are visitors struggling to find your contact information if they need help?
- ✔ Is your search box floating around and hard to find?
- ✔ Do your users prefer text, images or video?
- ✔ For links, do they prefer to click on text, illustrations, photos or buttons?
- ✔ Is an image link failing to load, so users don't know what it is and are irritated by clicking on something unnecessarily?
- ✔ Are your error messages loading into the wrong part of the page?
- ✔ Are mobile customers having to do too much pinching and panning?
- ✔ Does nothing happen when the user clicks a button or combo box?
- ✔ Are people repeatedly clicking on your logo (or even a breadcrumb trail) because they're lost?
- ✔ Are users repeatedly attempting to do something you never anticipated?
- ✔ Is there a question in a form that causes a disproportionately high number of users to struggle?
- ✔ Do any page elements overlap important content, preventing users from interacting?
- ✔ Are buttons or text fields on a mobile device too small to be practically useful?
- ✔ Does the navigation function correctly on the device?

“Heatmaps are a great way of getting a snapshot of how visitors interact with key pages on a site.

We use them to quickly highlight whether key content is getting missed, whether CTAs are visible, and whether visitors are clicking on areas that are not, in fact, clickable.”

Phil Reay, Head of Insight, SessionCam



Changes you might make

Once you've started getting some answers to the questions above, you'll have the evidence you need to start optimizing your pages. Here are just a few examples of the things you might choose to do or test out:

- Get each page working effectively across all devices and operating systems.
- Correct any bugs in your code.
- Ensure that all page elements are present, and load promptly.
- Change the order and location of key messages and CTAs.
- Optimize the size and positioning of images and text.
- Tighten/shorten your copy, or lengthen/clarify it.
- Replace large amounts of text with a short explanatory video.
- Apply different color and contrast combinations to attract or deflect attention as required.
- Offer live chat or pop-up help, and better locate error messages, so you don't lose users to frustration.
- Remove all distractions from those vital pages at the end of the funnel (such as checkout).
- Conversely, replace absent content, such as access to delivery information, that was causing people to search for it or even navigate away from the checkout page.
- Provide clearer instructions, or add FAQ/help pages or pop-ups.
- Enlarge or redesign important buttons, and repeat them in key locations.
- Adopt a format for form fields that users feel comfortable with (e.g. date format).
- Interpret user behavior (is a personal question – or the way it's worded – causing people to exit the funnel?) and adjust the page accordingly.

“You can tell colleagues or agencies 1,000 times to design a web page in a certain way – but for some reason, they always need to see it for themselves. Heatmaps provide that essential evidence of the way humans behave on a page.”

Matt Douglas, Digital Customer Experience Manager, E.ON UK



MANAGING HEATMAPS ON DIFFERENT DEVICES

Nowadays, not only do most good websites display differently on mobile devices (such as smartphones and tablets), but we also know that users *behave* differently on mobile devices.

The website is different

Often, mobile websites – or websites adapted to be responsive on mobile devices – are stripped-back versions of the desktop website. There may be fewer pages, and/or less content on the page. The way the pages behave may be different, too. For example, since clicking to other pages can be more painful on a mobile, you might want to try and get as much done on a single page as possible.

All of this has implications for the way you design your mobile pages. If you've removed a lot of what you think may be unnecessary content, what do you do if a user starts to look for it? Conversely, what if your page is a little cluttered – and a user's finger hits a link by mistake, taking them away from your checkout page or even out of your website?

And all of this, in turn, has implications for the way you generate and interpret your heatmaps. Not least, you'll be wanting to think about the kind of filtering you'll want to do.

The interaction is different

Smartphones and tablets are smaller than desktop displays. So what users can see at a given moment will almost certainly be less, and even less again if you've

stripped out some content. Gestures are different, too: mobile users will use their fingers or a stylus to click and scroll, rather than a mouse, and they'll pinch and pan. And in the vast majority of cases, there's a virtual keyboard rather than a physical keyboard.

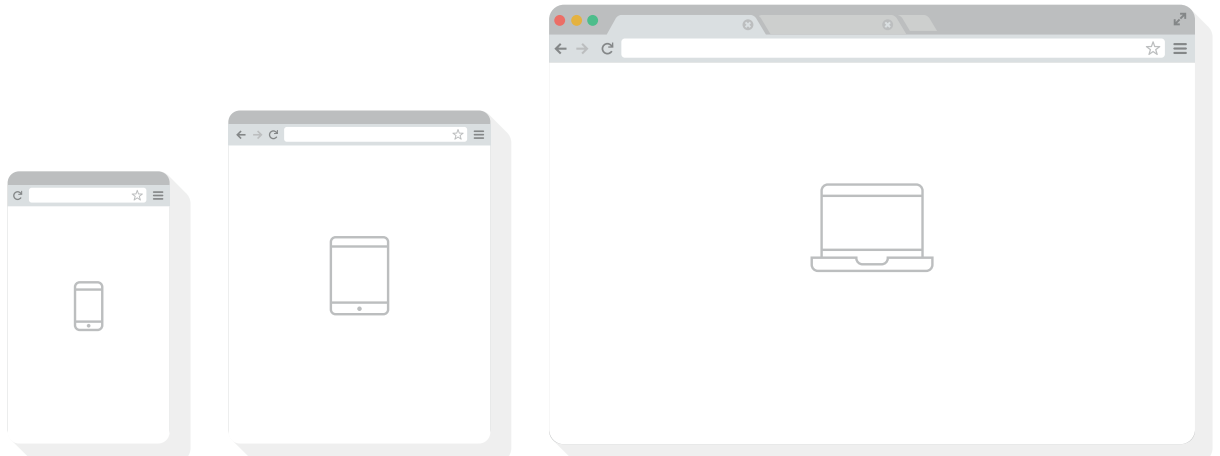
Your page design will have to take into account that users may not be able to see key messages or CTAs. They make find completing a form more problematic – and if they navigate away from a page, they may struggle to find their way back, and might abandon their session altogether.

The behavior is different

Mobile users are often multi-tasking, with half an eye on something else (like the TV, or the next stop on the train). They may be in a hurry – and even if not, their attention span is likely to be shorter than when using a desktop. They know that there's more chance of things going wrong, like losing signal, accidentally closing or navigating away from the page, or having a technical problem. Frustration can set in more quickly.

In summary

Users get, and they also expect, a different experience on a mobile device. But does what they expect *match* what they get? With more and more customer engagement taking place on mobiles, it's essential to get your customer experience (CX) right. And that means it's essential to be able to use heatmapping to help with your CRO – and to know why your CRO will be different for your mobile site.



USING HEATMAPS ON MORE COMPLEX PAGES

Not every webpage stays the same, all the time; some pages are designed to change substantially during a single user interaction. So can a heatmap actually tell you anything meaningful about such pages?

The answer is yes: the smarter heatmap tools can handle these more complex pages. Let's look at a couple of ways they do this.



Expand/collapse states

Some webpages use expand/collapse (also called show/hide) to reveal additional content to the user. Let's imagine that you have an FAQ page. To make the full content seem less overwhelming, and to make it faster for users to spot their own question, you've chosen to display only a list of questions 'all of the answers are hidden behind a click.

When the user clicks on a particular question, the answer is revealed just underneath, which has the effect of pushing the rest of the questions lower down the page. But when you generate a heatmap, how can you know what part of the page the hot areas relate to? What question (indeed, if any) did the user expand? Which page states do clicks on a heatmap refer to?

A good heatmap tool will let you set up different 'states' for each page. You can define a different state for each expand/collapse, and generate a separate heatmap for every state.

Single-page applications

To understand what a single-page application is, let's take the example of a checkout funnel. Having chosen their purchases, the user will create an account (or sign in), provide delivery details, enter payment information, and possibly even go through a few other steps, as well. Often, these processes are managed by separate webpages. But what if they're all done on a single page?

CSS overlays let you consolidate these multiple steps within a single webpage, making the process much more fluid for the user (ideal on mobile devices, when patience and attention span may be in shorter supply). But what can a heatmap tell you if the page has been *designed* to change dramatically during every session?

The way around this is to use your heatmapping tool – as long as you're using one that supports this function – to create a virtual page for each overlay version of the page. These will show up as separate URLs in your dashboard, so you can see precisely how users interact with each overlay.



CAN HEATMAPS HELP WITH SEO?

Finally, but by no means least, let's talk about how using heatmaps effectively can help you with your SEO – specifically, your bounce rates.

Your bounce rate is the percentage of visitors who come to one of your webpages (which probably isn't your home page) but then leave without visiting any other pages.

Imagine throwing a ping-pong ball against a wall: that's a bouncing user, departing almost as fast as they arrived and leaving little sign of their passing.



Little sign, that is, unless you're using heatmaps.

Why does bounce rate matter?

First, bounce rate matters because we like to think of people wandering happily through our websites, engaging in a leisurely way with our carefully created content, reading about our products, and responding gladly to our calls to action. We don't want them leaving in a hurry. So we don't want a high bounce rate.

But bounce rate has another critically important role: it tells Google how interesting a website is.

Nowadays, Google is all about the user experience. Google is looking for webpages that users find interesting, spend time on, engage with – in other words, pages with lower bounce rates. And that's why CRO and SEO are inextricably linked.

Google always spots a bounce. Even if you haven't asked it to; even if you're not using Google Analytics. If Google notices a high bounce rate for a page, it will assume users don't like that page, and will take that into account when serving up search results. If your pages aren't keeping people interested, Google will push your page (and your site) further down the search rankings, perhaps behind your competitors.

How heatmaps can help

Although you can't do anything about Google's reaction to your bounce rates, you *can* take steps to *improve* your bounce rates. Of course, there are some aspects of SEO that heatmapping can't help you with (for example, very slow page-load times can bounce people away). However, heatmaps can help you fine-tune your SEO in many ways – more ways than we can describe here, but here are a few examples:

Internal links – It's good SEO practice to create links between pages within your website: if a user follows at least one link, they obviously can't be 'bouncers'. So use heatmaps to tell you which locations, style and anchor copy make the most appealing links. For example, do people tend to click more on images, or text? Which text strings and keywords engage more people? Are links better at the top or the bottom of the page, or are they equally important?

Boring pages – Are users seeing a wall of text, with no structure or images? Are they overwhelmed to the point of being underwhelmed? Scroll reach heatmaps can tell you exactly how far you've pushed your users' patience.

Faulty pages – Do your mouse movement or attention heatmaps show people scrolling around as if searching for something? Is a vital piece of content, image, link, download or CTA button missing? Or are they repeatedly clicking on something, only for nothing to happen? They may bounce away in frustration.

Unexpected pages – Similarly, aimless rapid scrolling, with a lack of other interaction, can indicate that the user didn't get what they expected when they landed on your page. Check whether your page title matches your content, and that your h1 tag (the most important heading on your page) reflects, clearly and correctly, both the page title and the main content.

Related pages – Even if a user has a very successful visit to just one page on your website, Google will count it as a 'bounce' if they leave without visiting any other pages – and that will affect your search rankings. So add teasers to other, related content, products, blog posts, and user guides, for example. Use heatmaps to see where to place those links, and which links are most appealing to users.

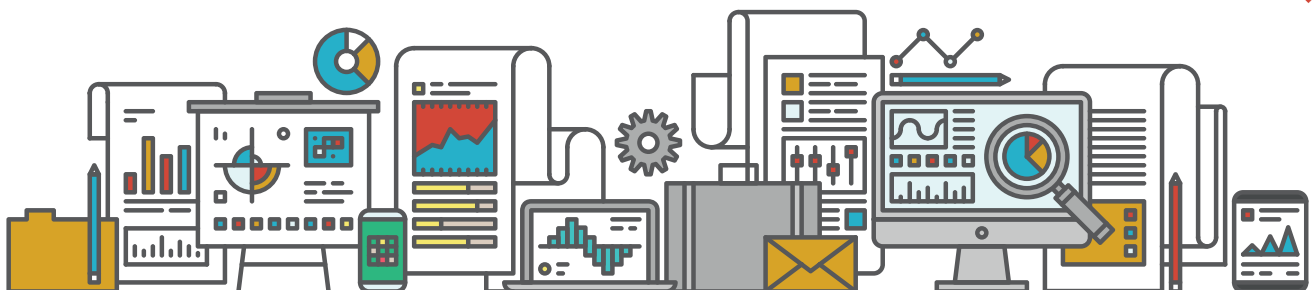




20 TOP TIPS TO BOOST CONVERSIONS FOR CRO

The following guidelinesⁱⁱ should help you understand more about how users interact with pages, and could inform and support your heatmap work

- 1 Put the content** most relevant to your user's goals at the top of your page.
- 2 Users in a hurry** will choose the page elements that shout loudest.
- 3 Users spend more time** looking at the left-hand side of your page.
- 4 Content is read in an F-shaped pattern:** top left to top right; then down and across again; and then down the page.
- 5 The first words** of your headline are important.
- 6 If you want people to read a section of text, use smaller type!** Larger type can get scan-read, with users just browsing for key words and phrases.
- 7 People like sub-headings and bullet points,** because they're easier to scan-read.
- 8 If you permit your own banners to look like advertising,** users will ignore them.
- 9 If you use photos of people on your page design,** it matters where they're looking... don't have them looking away from content or off the page.
- 10 Men are visual, women seek information;** if you're targeting one over the other, design accordingly. If targeting both, make sure there's something for everyone.
- 11 Users tend to ignore image carousels and slider images.** Use static images and banner messages for better click-through rates.
- 12 Areas of high contrast draw the eye;** too much contrast can overwhelm and distract. So use contrast wisely to guide users through the page and to the goal.
- 13 Older people are slower online** (taking up to 40% longer to complete a task), and make more mistakes. If they're your target market, adapt your design, copy and help accordingly.





20 TOP TIPS continued...

14 Use real people in photos; users can spot stock images. And make sure product information is accompanied by large, well-lit, high-resolution product shots.

15 Write enticing summaries to deliver click-through to your blog posts; automatically abbreviated content, or the full article can be a big turn-off.

16 If you rely on driving web traffic from e-newsletters, make sure they're captivating. People spend less than a minute reading newsletters, and will fully read only 19% of their content.

17 Combine A/B testing with click heatmaps for increased effectiveness. Create page variants by playing around with button and background colors, copywriting or element placement.

18 Don't necessarily look for huge changes. Sometimes the smallest alterations can deliver big changes in behavior.

19 Displaying the discounted price next to the original price will increase interest and satisfaction.

20 People see dominant headlines first – especially when placed in the upper-left corner. They also want the headline to match what they expected to see, or they'll feel disoriented.



"We'd launched a new consumer product, so we used heatmaps to see how well the ordering page was performing.

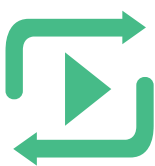
By moving some of the page content around, we achieved an **8% increase** in the number of people ordering the tool."

Matt Douglas, Digital Customer Experience Manager, E.ON UK



WHAT'S NEXT AFTER HEATMAPPING?

Once you're confident with producing and interpreting heatmaps, you may start looking for more ways to understand what's happening in your conversion funnels. Heatmaps are great, but there are additional tools that can help you discover new insights.



Session Recording

Session recording lets you watch users as they interact with your website, either in real-time or as a play-back. You can see them click, scroll, hover, dwell, and fill in forms, for example. Some heatmapping tools include session-recording facilities as part of the package.

Your heatmaps may be showing you a hot area over a particular form field. So you know there's a problem there... but why are users having a problem with that field? A heatmap can only point to where a problem exists on the page; it can't tell you what the problem is. However, if you have session recording, you can go watch individual user sessions and see exactly what's happening.

If you see people hesitating, perhaps they don't know what to do, so you could add in some more instructions. Or they may fear they're providing too much personal information, so you could find a way to mitigate that or reassure them. Perhaps they're entering the wrong content into the field, in which case you can alter your copy, or provide pop-up help or a link to live chat. They may be repeatedly clicking on a button, such as 'address look-up', only for nothing to happen.

Session recording adds the next level of intelligence to what you're seeing in your heatmaps, cutting out a lot of guesswork and trial-and-error fixes.

"Heatmap and scrollmap reports are also important diagnostic tools when paired with analytics and session recordings."

Brian Massey, ConversionSciences

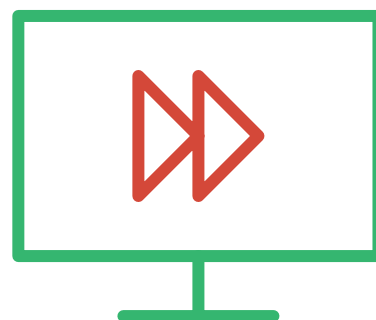


Customer Struggle

One customer experience analytics solution which includes heatmapping, called SessionCam, is the only one to offer a machine-learning algorithm which takes the hard work out of pinpointing and prioritizing your CRO tasks.

The algorithm generates a Customer Struggle Score (CS Score) for each of your webpages, using real visitor data to spot exactly where customers are having problems. By analyzing over 100 different signals from user behaviour, the algorithm identifies which pages are most problematic for users, and intelligently ranks them in order of urgency of attention. This takes the groundwork and guesswork out of planning your CRO schedule.

You'll see an aggregate CS Score for each of your webpages (0 would indicate no struggle, while 5 would indicate a highly problematic page). You can then choose to look at any page in more detail by clicking through for information about individual user sessions. Each session is awarded its own individual struggle score, so you can choose to go straight to the most problematic sessions and watch a recording of the session – showing exactly what the user did and where their struggle points were.



WHAT HEATMAPPING TOOLS ARE AVAILABLE?

If you've decided to get started with heatmapping, it's time to go shopping for the right tool.

What should you look for?

- ✔ How much does it cost? And if it's free... ask yourself why
- ✔ Are there different pricing plans, and is the product too limited without upgrading?
- ✔ What kind of heatmaps are available as standard?
- ✔ Are the heatmaps overlaid onto the page as it exists today, or as the user saw it at the time?
- ✔ Can the tool handle different page states, and single-page applications?
- ✔ Can you download and share heatmaps?
- ✔ What other features does the product offer?
- ✔ Does it handle all types of device?
- ✔ How long will your data be stored? (You may need to go back to it one day!)
- ✔ Are there interfaces or plug-ins for other tools, such as Google Analytics or A/B testing software?
- ✔ How fast, and how good, is the technical support – and how is it accessed?
- ✔ Does the company provide training, to help you use the product, and consultancy to help you interpret what you find?

What heatmapping tools are available?

Here's a selection of some of the best-known tools, although others are available. They range from the cheap and cheerful to the more professional:

SessionCam – sessioncam.com

Crazy Egg – www.crazyegg.com

Clicktale – www.clicktale.com

Mouseflow – mouseflow.com

Lucky Orange – www.luckyorange.com

Inspectlet – www.inspectlet.com

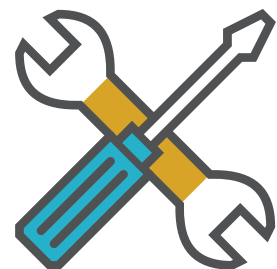
HotJar – www.hotjar.com

Heatmap.me – heatmap.me

IBM Tealeaf – www.ibm.com/commerce/us-en/campaigns/customer-experience-management/

Decibel Insight – www.decibelinsight.com

UserReplay – www.userreplay.com



i <http://conversionxl.com/19-things-we-can-learn-from-numerous-heatmap-tests/>

ii Adapted from <http://conversionxl.com/19-things-we-can-learn-from-numerous-heatmap-tests/>





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About SessionCam

SessionCam is a SaaS solution designed to help companies across the globe to optimize the online customer experience and find website conversion issues. We do this by taking an intelligence-based approach - using machine-learning algorithms to easily identify, visualize and understand your customers' points of struggle and deliver prioritized, high-value recommendations.

Founded in 2009, we are one of the most experienced and mature solutions available, setting the global standard for measuring customer struggle.

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