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Issue 306 : June 2018 : net.creativebloq.com

* PROTOTYPING

5 POWERFUL PLANNING APPS

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OF YOUR DESIGN

25
GAME CHANGING
JAVASCRIPT
TOOLS

- ENHANCE CODE QUALITY
- FINESSE APP FRAMEWORKS
- TUNE UP TESTING
- REFINE UI



JOE LEECH INTERVIEW

CSS CUSTOM PROPERTIES MADE CLEAR

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★ WELCOME

EDITOR'S NOTE

► Considering JavaScript is used by 95.1% of all websites, it's no surprise it's considered one of the most critical tools in a web designer's arsenal. Given its dynamic, weakly typed, prototype-based and offers a multi-paradigm approach, JavaScript is well-suited to solving myriad programming problems. However, this very versatility also means that it can be hard to identify the right packages and programs to serve your purposes.

Evidently, the dev and design community is crying out for a detailed breakdown of the benefits of the many packages on offer. Fortunately, they are in luck. This issue Matt Crouch is outlining all of the

JavaScript tools you need to unleash your creativity, whether they are helping you increase code quality, perfect project testing or make use of interfaces.

And there's far more JS where that came from. This issue Neil Pearce is here to give you a grounding in Vue.js and show how the flexible framework can be used to build a single-page app. Meanwhile, Carl Cahill runs down a range of power prototyping tools to perfectly plan out your projects. Finally, Simon Yeoman dives into the issue of net regulation and whether tech companies can ever really be trusted to police themselves.

Enjoy the issue!

FEATURED AUTHORS

MATT
CROUCH



Matt is a front-end developer working with Vidsy to help bring creatives and brands together. On page 60, he offers up his top 25 JavaScript tools.

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CARL
CAHILL



Carl is a UX and UI creative for brands, who has over 10 years' experience. He profiles the most practical prototyping apps available on page 68.

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JULIA
ROBERTS



Passionate about enabling creative comms, Julia is a marketing executive at Like Digital. Her piece on page 36 asks if we really give our time the respect it deserves.

w: like.digital
t: @likedigital

KRISZTIAN
PUSKA



Krisztian is the co-founder of Let and has expertise with design systems and CSS. On page 82, he explains why you should be writing valid CSS with an introduction to custom properties.

w: <https://let.codes>
t: @pyx



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PRINTED BY

Wyndeham Peterborough, Storey's Bar Road, Peterborough, Cambridgeshire, PE1 5YS

DISTRIBUTED BY

Marketforce, 5 Churchill Place, Canary Wharf, London, E14 5HU www.marketforce.co.uk 0203 787 9001

ISSN 1355-7602

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*VOICES

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> We discover how **Joe Leech** applies psychology to UX design and discuss best practices and the ethics involved



Photo: Jon Tan

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HOW DO YOU POWER THE NEW MOBILE WORKFORCE?

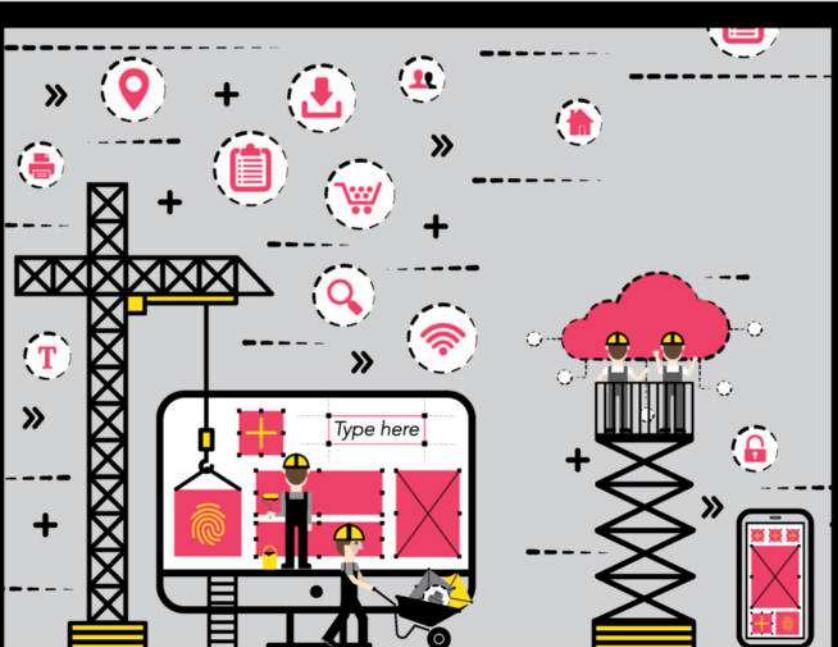
Citrix is helping Aston Martin Red Bull Racing reimagine how they work at the track, the garage, the factory and everywhere in between. This is how the future works.

CITRIX

★ REGULAR

GALLERY 40

Carl Cahill runs down his favourite websites of the month, including Redbull Racing and Citrix's new dynamic animated site

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Carl Cahill gathers together the most essential pieces of software to help you achieve all your prototyping tasks



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Neil Pearce shows you how to install Vue.js using the command line interface and build a basic SPA with CSS animations

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Michiel Bijl explains why every team should have an accessibility specialist

EXCHANGE

Send your questions to netmag@futurenet.com

Practical
advice from
industry experts

THIS MONTH FEATURING...

ELAINE CHAO



Elaine is a product manager at Adobe working on Adobe XD CC, the all-in-one UX/UI solution for designing and prototyping mobile apps and websites. She's the author of the popular Adobe XD pro tips series on Twitter.

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ALEX RUSSELL



Alex is a web developer working on Chrome, Blink, and the Web Platform at Google and serves on ECMA TC39, the standards body for JavaScript. He's also an elected member of the W3C Technical Architecture Group.

w: infrequently.org
t: @slightlylate

★ QUESTION OF THE MONTH

How is Adobe XD going to be developed this year?

Hemali Tanna, Mumbai, India

EC: We have a lot of new functionality in the pipeline for the next six months and beyond. Adobe XD is constantly growing and evolving and our monthly releases mean that you'll be able to use new features as soon as they're ready. If I were to categorise the two types of features we're focused on in the next six months, I'd say increasing both productivity and expressiveness.

Productivity features like the introduction of linked colours and symbols through the Assets panel increase the speed of your design process. And additional changes – such as adding support for math operators in our Property Inspector values – will enable you to truly design at the speed of thought.

Additionally, we're heavily investing in increasing the expressiveness of both design and prototyping features (see panel). Finally, we're also looking at deeper integrations with other applications within the Creative Cloud, focusing on Photoshop and Illustrator. We know we're part of a larger ecosystem and are working on ways to bring the entire family of applications closer together.



As competition heats up in the prototyping tools space, Adobe XD is refusing to rest on its laurels in 2018

PWAs

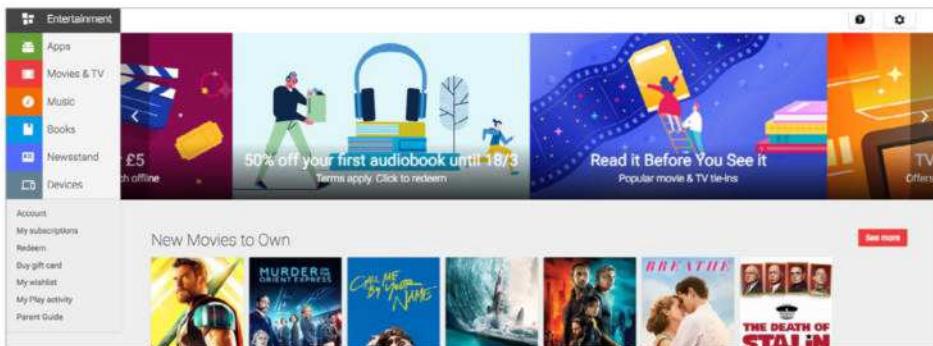
DON'T SWITCH STREAMS

Would it be true to say that there are two types of progressive web apps (PWAs) emerging? For example: older websites that are progressively enhanced with things like offline/push notifications; and single-page applications developed more

recently that are intentionally built as PWAs from day one.

Calum Ryan, Tonbridge, UK

AR: I think that's about right, although I also think the landscape will get more complex this year thanks to Streams. Streams enable us to start doing 'template stitching' on the client side,



PWAs are an increasingly viable alternative to native and they'll soon be coming to the Google Play Store

which will enable killer multi-page PWAs that, I think, are probably the right architecture for most sites.

PWAs

ADAPT TO THE APP MODEL

Do you feel that the number of new browser APIs coming with PWA will be overwhelming for developers, especially newer ones?

James Milner, London, UK

AR: Newer developers seem to have less difficulty with the app-like model that PWAs present. It's folks who aren't used to the idea of a client-side component with its own update cycle that struggle to turn out great experiences. Converts from native app development tend to excel in building PWAs.

ADOBE XD

BUILD FOR THE COMMUNITY

What's the most important lesson the XD team has learned in building tools for other designers?

Diomari Madulara, Davao Region, Philippines

EC: One of the greatest temptations we fight is to only rely on our own opinions or only checking in with Adobe designers to craft experiences for our entire community. The fact of the matter is the design community is incredibly diverse and we get the best results when we leave our building and truly delve into the breadth of experiences and needs of our community. The good news is the design community is strong, interested and engaged. Our users are deeply invested and have freely shared their insight on

their own needs and their observations of the industry as a whole.

As a result, we've made it a priority to engage with our customers worldwide, planning visits to listen to people and observe how they work. But it's not just product managers and user researchers that engage with our community; we bring our engineers and designers along with us to talk with agencies, visit enterprises and chat with freelancers, all to help build the internal empathy that results in superior experiences.

PWAs

ACHIEVE FEATURE PARITY

Besides WebUSB/WebBluetooth and WebAssembly, what other progressive web app features need work/spec/support to achieve feature parity with native or native-ish? Also when will PWAs be listed in Play Store?

AJ Klein, Dallas, USA

AR: There's a pretty long list of features we'd like to bring to the web but the list is different for desktop and mobile. That said, I don't think there's some magic finish line where, if we just add that one feature, we've made it. Instead, it's about the rate of progress. Are we adding features to the web at the same rate native gets them (but perhaps at some delay)? If the answer is yes, I'm confident the web can compete, particularly in the long run.

And PWAs in the Play Store are coming! We're hard at work on a feature called Trusted Web Activities that will let you build APKs you can list that just wrap PWAs. Look out for more on that later this year.



3 SIMPLE STEPS

What new and upcoming features in Adobe XD should people be made aware of?

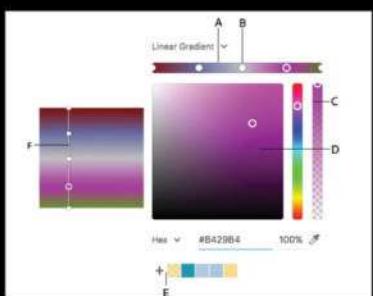
Trent Davidson, Leicester, UK

EC: Users of Adobe XD can request new features via our UserVoice site (adobexd.uservoice.com). Here are some we've been working on lately...



Design features

+ From the design perspective, the XD team has been working on features that enable higher fidelity designs over the past few months, and recently released both radial gradients and stroke position.



Prototyping

+ From the prototyping perspective, we're in active development for some of our most requested features, including the ability to fix a header or footer and create an overlay artboard that can slide over an existing artboard.

Motion

+ Also be on the lookout for even higher fidelity motion in the future: there's much more on the way for users of Adobe XD.

COOL STUFF WE LEARNED THIS MONTH

EVERYTHING EASY IS HARD AGAIN

 Feeling bamboozled by the complexity of making websites these days? You're not alone. Frank Chimero took a break from making websites for three years and was surprised by what he found when he returned to it. How did things get so hard? <https://frankchimero.com/writing/everything-easy-is-hard-again/>

THIRD-PARTY CSS IS NOT SAFE

 Following the recent alarm around a keylogger built with CSS, Jake Archibald wrote this important post about the dangers of relying on third-party CSS – and in fact any third-party content. As well as explaining how these tricks work, he suggests some ways of fortifying your sites.

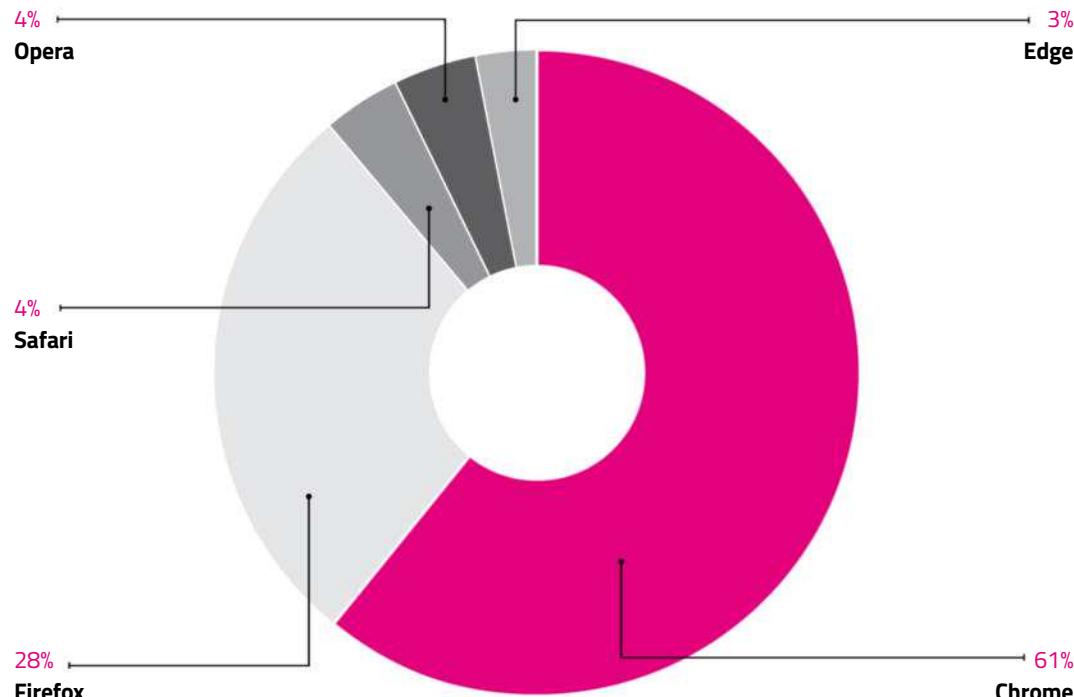
<https://jakearchibald.com/2018/third-party-css-is-not-safe/>

LEARN CSS VARIABLES FOR FREE

 CSS variables are well worth getting to grips with as they make your code more flexible and your life easier. These free screencasts will get you up to speed in no time, and conclude with a challenge to help the knowledge stick. <https://scrimba.com/g/gcssvariables>

*THE POLL

WHICH BROWSER DO YOU USE FOR WEB DEVELOPMENT?



From our timeline

What's your worst job interview experience?



I was left in a small room that was more like a cupboard with empty boxes and forgotten about for 45 mins! No apology or prep work from them.



At the beginning of the interview, my would-have-been boss (had I accepted) thought he was being polite to me by yelling at his current design lead to do things for me. That just showed me how he treats his employees.

@alainavirginia



When a manager asked me about Office Skills while interviewing for a Graphic Design position.

@WaqDev



At the end of a long 5 person, back 2 back interview, I show the evp my site on my phone. I hand it to him and he says, You run a porn site? My site was hacked and had all sorts of porn intermixed with my content... he was a good sport about it tho and I was hired anyway.

@oquillia



One of my first interviews out of uni, the interviewer abruptly passed out midway through the interview then had no awareness anything was wrong when he came round. Part of me still wonders if it was a test.

@david_panik



It was a test experience alongside another candidate who discussed his love of Morris Dancing, couldn't complete the test as it was too difficult and then begged for the job because his wife had just left him. The company I was applying to couldn't apologise enough!

@Nor_21

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THIS MONTH FEATURING...

CLIENTS FROM HELL 14

This month's Clients from Hell sees a freelancer having to fend off a client's unwanted advances



BEYOND PIXELS

Cliff Nowicki's computer-game obsession led him to record gaming videos for his family's YouTube channel

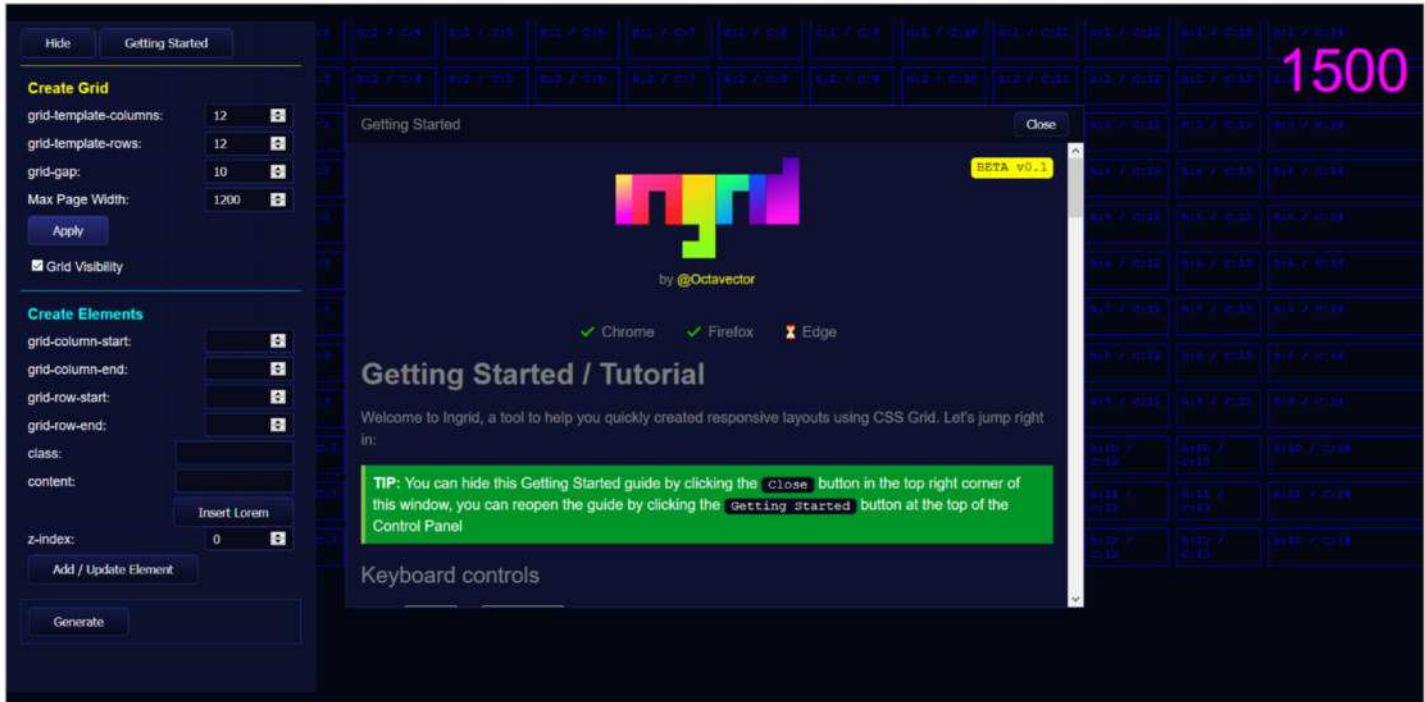
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WORKSPACE

Lauren Plews, lead product designer at Kalo, gives a behind-the-scenes glimpse of the company's offices

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INGRID

Matthew Croud explains how he built a tool for creating fluid layouts across multiple breakpoints

* SIDE PROJECT OF THE MONTH



MATTHEW Croud

job: Creative front-end developer
w: ingrid.guide
t: [@Octavector](https://twitter.com/@Octavector)



Tell us more about Ingrid

Ingrid allows users to visually develop complex and flexible layouts. Similar to a spreadsheet program where you can select and colour cells in a table, Ingrid invites you to make a master grid and then populate it with child elements by selecting individual cells. When elements are added their grid coordinates are ‘recorded’ at the current browser width like keyframes in an animation.

Why did you create Ingrid?

The idea came from past experiences in print design, using such tools as QuarkXPress and Adobe InDesign to create layouts for brochures. Each project document would begin with a large and flexible grid, which would help arrange the elements on the page. As CSS Grid allows us to think beyond rows, I wanted to make an interface to simulate those lovely grids offered in the print publishing programs, only much, much worse.

What were you hoping to achieve?

My aim was to build a tool that could generate a

starting point when tackling a flexible, grid-based layout. CSS Grid allows complete freedom of movement for all child elements and with those elements requiring an adaptive grid for varying screen sizes, there is scope for some incredibly complex and dynamic layouts.

What technologies were used in building Ingrid?

I developed Ingrid entirely on CodePen before exporting, minifying and uploading to ingrid.guide. I used Sass out of habit but in all honesty there wasn't much CSS heavy lifting required. I also used Babel so that I could work with the latest and greatest JavaScript features; no additional JS libraries or frameworks were used. I didn't use Vue or React or Angular or Backbone or Ember or Meteor or...

How has Ingrid been received?

The initial wave of recognition came from a share from speckyboy.com who kindly spread the word on Twitter and Facebook. But it's early days for Ingrid as it only went live at the beginning of February and there are plenty of additions and tweaks I have planned for the future.

What's next for Ingrid?

When CSS Grid Module 2 (<https://www.w3.org/TR/css-grid-2/>) lands I'm hoping to implement subgrid support for proper nesting of elements.

If you use Ingrid to help build something, anything, I would love to hear about it! [@Octavector](https://twitter.com/@Octavector)



★ HOW TO

HANDLE FEEDBACK FROM NON-DESIGNERS

We asked @netmag's Twitter followers for their tips on dealing with feedback from non-designers. @_csilverman offers the following useful pointers.

FIND THE PROBLEM

The core, underlying question to be asking isn't "What details are they asking me to change?" but "What problem are they asking me to fix?" My last boss – after years of extensive back-and-forths with clients – gave clients an exercise: come up with a list of words that represented what they wanted. Then we'd work with them until consistencies began to emerge. We got really good results from this.

GET TO THE HEART OF IT

Benefit of the doubt is huge: overlook awkward language or impractical suggestions and try to decipher what they're really responding to. "Can we make the entire header an animated GIF?" is probably not a good idea – maybe what they really want is a more engaging design in general.

MIND YOUR EGO

I'm also working on ego control: remembering that my work reflects the client on a personal/professional level. Push back on damagingly bad ideas – stuff that's legitimately ugly, broken or confusing – but remember that what you think they should want isn't always true to what they actually need.



UNWANTED ADVANCES

Exclusively for net: The latest in a series of anonymous accounts of nightmare clients

★ CLIENTS FROM HELL



I'm a 26-year-old male designer. I was making some new branding for a new client – who, for the record, was a 45-year-old man. The work was all fairly straightforward – things like business cards, comp slips and a letterhead – but the client insisted we meet for coffee before I started. He seemed polite and his request was reasonable so I agreed to meet.

After we talked for 15 minutes about the work, he started asking about my personal life:

Client: How long have you lived in the city? Any wife or kids?

Me: I've lived here for three years. I used to live around the countryside but there is not a lot of work outside of cities. I don't have a wife or kids, but I do live with my boyfriend and we have a dog and two cats.

Client: Exciting! Well if your partner is as attractive as you then you're both lucky men.

Me: That's very kind of you to say. Thank you.

I tried to divert the conversation back to work but he kept on bringing up gay topics and asking about my personal life. After being there for 45 minutes, we finally got to the end of our meeting and parted ways. I received an email from him before I even got to my car.

Client: It was VERY nice meeting you, and I really felt a good chemistry between us. If you're ever in the city again, I'd happily invite you into my private room. I believe I could make you feel things you've never felt before.

I did not reply to his email. I completed the work and sent it to him in a timely manner, along with an invoice. He paid promptly, adding a 50% bonus but including a note:

Client: I can make you happier.

CLIENTS FROM HELL
clientsfromhell.net

VIDEO-GAME STREAMING

How Cliff Nowicki's video-game obsession led him to record gaming videos for his family's YouTube channel

* BEYOND PIXELS

> I've always been a fan of video games since my parents first got me and my brother an Amiga 500 as a kid with Pluto and Firepower. Video games come as a way to relax after a day of designing and switch my thinking to puzzle solving or fast reactions. Being able to play with family and friends is what drew me in more towards online gaming and eventually the family gaming channel we set up on YouTube [called The Now Gaming Zone].

The idea for a gaming channel started when all three of my boys would play Minecraft together and then watch other people play it to get ideas on how to create their worlds. They would pretend they were making their own videos on YouTube talking amongst themselves. I figured: "Why can't we do that? I'm sure it's not too hard."

I did some research and within a few days, we started streaming on Twitch. It was primitive but I would take the saved videos from Twitch and upload them to YouTube. The video quality was awful but we were on YouTube!

After a while, we invested in an Elgato capture device for the Xbox and a Yeti Mic. We made just about every mistake you'd expect from a new YouTube channel such as bad audio, bad resolution and a load of garbage videos. We kept

at it, though, and made an effort to create a video or two every week to keep the channel current.

The channel started out primarily focusing on Minecraft and has evolved alongside our family gaming habits. We've touched on games like Call of Duty, Plants vs Zombies and more recently Fortnite PVE and Battle Royale.

I find it a great creative way to spend time with the family while coming up with ways to promote the channel. Starting the gaming channel has been a great way for the family to bond and spend time coming up with ideas for videos to create.

To help make more gaming content for the channel on the cheap, I've also had the chance to play more indie games. The amount of innovation in these small games is astounding. It's a great source of inspiration as I'm able to think about design interfaces in a new way as well as how interactions can work on the web and mobile. I think starting the channel and playing indie games has made me become a better designer these past few years. ■

Cliff is a designer who enjoys crafting visually appealing and user-friendly experiences.



* PROFILE



STUFF I LIKE



SUSH KELLY

Digital director at Imagine

www.sushkelly.co.uk

@maxray

TINYPNG

An old one but a go-to while developing assets or blog post images. Drag your PNGs onto the browser and watch the Kbs fall off. Often you will have a solution built into your workflow but for all those other times TinyPNG is definitely a firm favourite.

tinypng.com

FIREFOX DEVELOPER TOOLS

Over the last ten years I have swung between Chrome and Firefox. With CSS Grid arriving over the last 12 months, Firefox has smashed it with its dev tools for Grid. Really useful both for those just starting out and more seasoned developers.

XTENSIO PERSONA CREATOR

I love creating personas with bits from magazines and so on. Xtensio lets you build up personas and save them as PDFs, the modules are easy to use and let you focus on creating the personality.

<https://xtensio.com/user-persona/>

Make work beautiful
100%
Serious fun
Go together



KALO

Lead product designer at Kalo, **Lauren Plews** gives us a behind-the-scenes glimpse of the company's London offices

* WORKSPACE

When we moved to our King's Cross office just over a year ago, we wanted to build a creative and collaborative space where people were able to work together and solve challenging problems. Kalo allows freelancers and companies to work with the best talent anywhere in the world. We decided our office setup needed to reflect this ethos regardless of whether you work remotely or come into the office.

Our office space is completely open plan and we work in our project crews – teams that mix product managers, designers and engineers, rather than sitting in our separate disciplines. It's such a collaborative way of working on a problem and allows us to share knowledge across the company.

I enjoy spending time in our chill-out area (1) with other members of the team syncing up with our San Francisco office, remote workers and customers. We have every room set up with cameras, Jabra microphones and speakers (2) to make this feel seamless and remove any communication barriers. Having clear communication across countries is critical to our culture.

We have our core values printed on the wall (3) as we come into the office to remind us what we should be working towards each day: "Make work beautiful", "100%", "Serious fun" and "Go together".

I love that we have photos of the team (4) scattered throughout the office – it makes the space feel more personal and always brings a

smile to my face. We take our work seriously but not ourselves.

We listen to music in the office through our Sonos speakers (5) and, surprisingly, we generally agree on the music choice – it's centrally controlled so anyone can be the DJ. We normally play chilled tunes during the week with more upbeat selections on a Friday to ease people into the weekend. We've found playing music in our offices makes for a much more collaborative and sociable environment.

Marker pens! (6) We're a creative, design-led company and have whiteboard surfaces everywhere. It's great to be able to pick up a pen and sketch out an idea whenever you have one or use illustrations to help communicate ideas regardless of your team or discipline. Our meeting room table is even a whiteboard surface for sketching ideas or taking notes. ■

PROFILE
Lauren works as lead product designer at Kalo, the world's first freelancer management platform.

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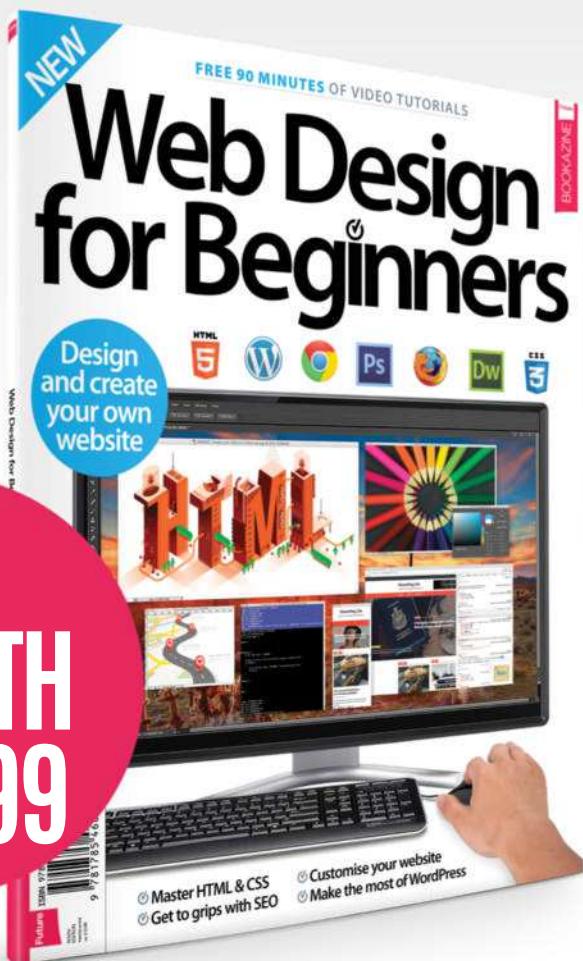
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Simon Yeoman asks: is it time to regulate the internet or can it be left to its own devices?



Photo: webdagene.no

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We discover how **Joe Leech** applies psychology to UX and UI design and discuss best practices and the ethics involved



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The Danish designer and entrepreneur **Michael Flarup** explains why being childlike leads to successful web projects

* CVs

PUT TOGETHER THE PERFECT CV

Menno Olsthoorn offers up insight on creating a CV guaranteed to make an impact

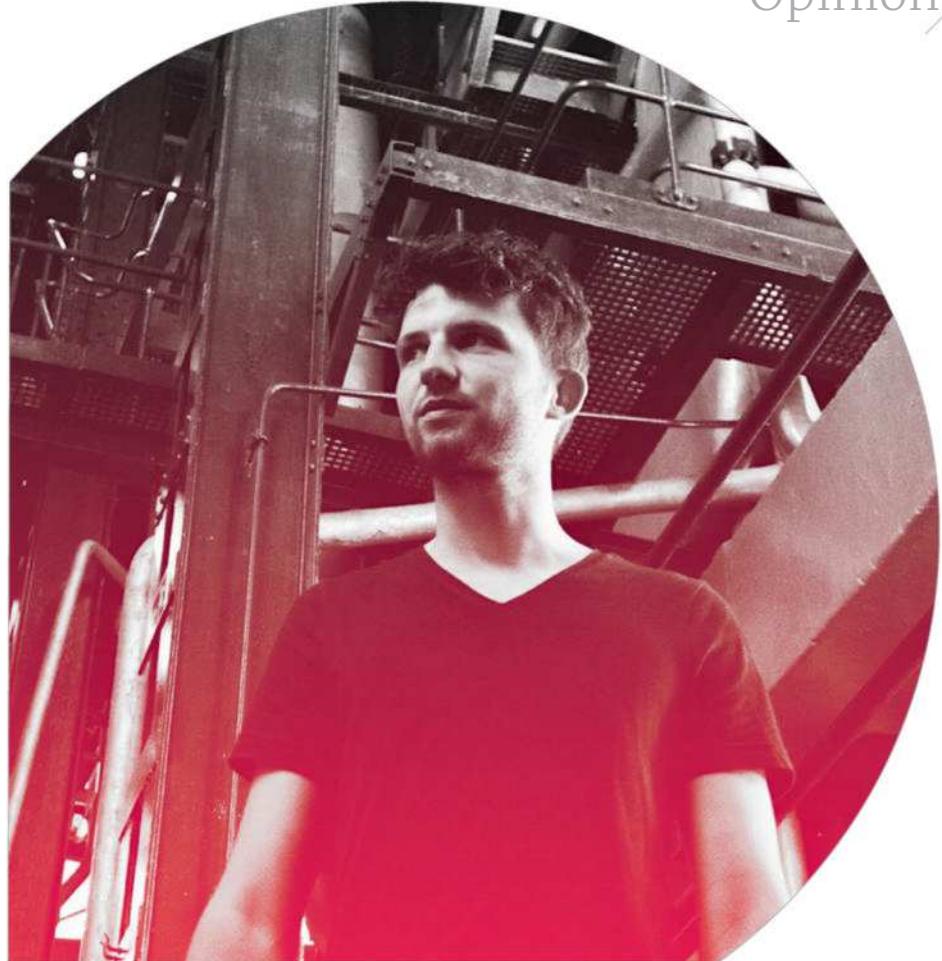


You are a web designer and you need to get your CV done. Not only do you need to get it done, you need to make sure it stands out and impresses hiring managers. No problem!

Although there are an infinite number of ways for creative people to construct their CVs, there are certain aspects that set winning ones apart from the remainder of the herd. Here are the most important things to accomplish when creating your CV:

1. CLARITY & CONTINUITY

Nobody wants to be confused or disoriented when reading through a CV. You need to ensure that it is as clear and concise as possible. It should flow well and have continuity. So if you use bullet points in one job description, be sure to use them with every job description after that as well. Clarity and continuity are key.



2. BREVITY

I'm not telling you to leave out important information but I am telling you not to write a book. Hiring managers often have to sift through hundreds of CVs. Don't let your CV scare them off with lengthy paragraphs and run-on sentences. Say what you need to say in as few words as possible. Quality over quantity!

3. PROOF OF EXPERTISE

Obviously one of your most important goals when writing a CV is the effective conveyance of your skills and expertise. The hiring manager is on a mission to hire someone who can do the job and do it right. Be sure to prove that it's you!

4. RELEVANT EXPERIENCE

The key word here is relevant. While it is true that most experiences help to shape and mold us in some way, you really are better off listing relevant experiences for a few reasons. If you are currently trying to find employment as a teacher, there is simply no reason to list your experience as a DJ circa 2007. You want your CV to flow well and have continuity. That being said, if you feel strongly that a work or life experience, though unrelated, particularly lends itself to your cause, then feel free to list it. Simply be careful about including too many irrelevant pieces in your CV.

So how should you go about creating this perfect CV? Let's take a look at a few of the options out there.

Option 1

● Draw your CV in Illustrator/Sketch and export it as a PDF

Pros: The choice of tools and visual elements are seemingly endless with this option. You are free to define and create your own visual style.

Cons: This process can be quite time consuming. When using this method, it may also be difficult to keep the structure optimised for recruiters. According to studies, recruiters tend to spend most of their time on select areas of a CV. This means that the structure of a CV and the position of elements in it truly matters. Although it could attract more attention

with its unique look, recruiters might miss important information if it's not placed in an ideal location.

Complexity: 4-10 hours on average, depending on your design skills.

Option 2

● Design your own portfolio website using web-based site builders

You can use services like Squarespace or Wix to build your own website. They offer a collection of ready-to-use site templates that can be customised.

Pros: Online portfolio websites give you greater opportunities to promote yourself. Websites are search-engine optimised, so your website might be indexed by Google, giving you more of an opportunity to get noticed by employers and potential clients alike.

Cons: These function more as online portfolios and it's worth bearing in mind that some companies will only accept printed CVs. I would recommend that you know your audience before taking this bold step!

Complexity: 3-5 hours of work on average.

Option 3

● Use convenient online CV builders with professionally designed templates

There are lots of online CV builders available but many of their templates aren't particularly appealing and, in some cases, can be downright boring. This is why any builder you choose needs unique design templates, a friendly user interface and should be carefully structured to follow the exact 'CV rules' hiring managers look for.

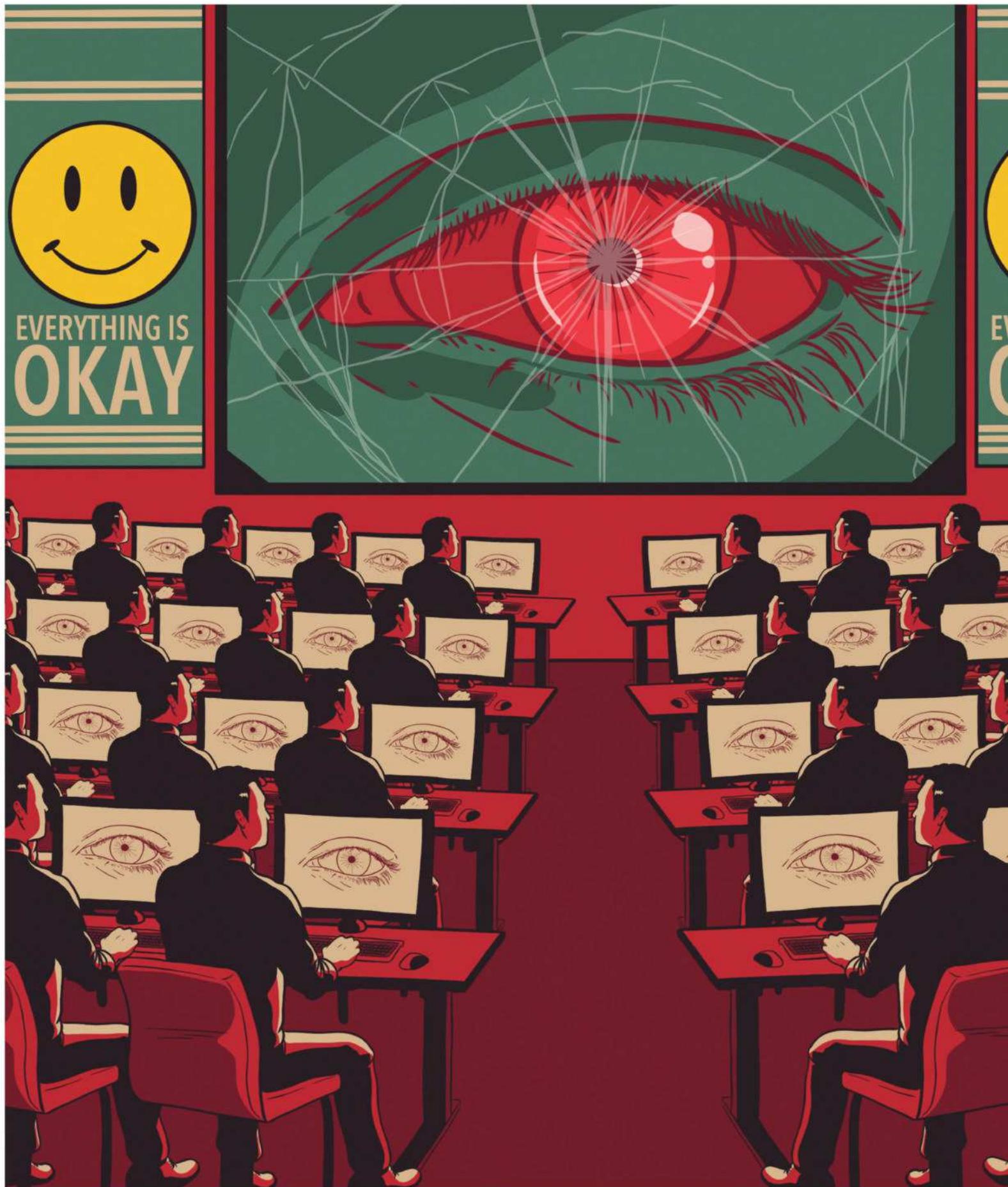
Pros: This is by far the fastest and most effective way to create your CV. There is a wide selection of templates from classic and clean styles to edgier and more creative ones. There is truly something for everyone.

Cons: You cannot adjust any of the styles. If you think that you will need this kind of control over visual elements, choose option 1 or 2.

Complexity: 15-20 minutes of work.

Menno is an entrepreneur from the Netherlands. He is now CEO of Resume.io, one of the largest online resume builders in Europe and the US.

* PROFILE





★ REGULATION

WHO WATCHES THE WATCHMEN?

Illustration by Kym Winters

Simon Yeoman asks: is it time to regulate the internet or can it be left to its own devices?

While the internet remains an overwhelming force for good, a number of recent events have led to some very serious questions being asked about its future direction and how it could be 'reset' to work in a better way for everyone going forward. Various utopian and dystopian visions of the internet have been suggested and some of these may hinge on the future role played by the tech giants that are currently dominating the industry.

We may look back on this time as the tipping point. Genuine questions are being raised about how best to manage the internet's challenges, and whether the internet itself needs to be redesigned.

There are two ways to address these challenges: we either reform the technology of the internet itself – essentially resetting it – or we find a way to regulate what we already have. Most likely we will need a combination of both approaches, so let's look at these in turn.

SELF-REGULATION OR GOVERNMENT INFLUENCE?

The main argument made against government regulation is that it's hard to regulate something that crosses international boundaries and isn't centrally controlled. Other than ICANN (Internet Corporation for Assigned Names and Numbers), there are no global internet authorities that are solely responsible for our internet

experience. There is nothing an individual government can do to meaningfully influence the internet, and even those countries that attempt to impose some levels of control or censorship can only do so much.

If individual governments cannot implement a meaningful solution, perhaps we need a global approach. Could a globally endorsed treaty for the internet be the solution, whereby every country agrees to pursue a common internet agenda? A Paris Agreement for the internet, if you will. While such an agreement would be a laudable achievement, I suspect it would be nigh-on impossible to achieve such a technical level of agreement among all 193 UN member countries that could make any meaningful impact.

BUILDING A BRAVE NEW INTERNET

So, what would a 'new' internet look like? If we took today's most advanced technologies and attempted to build something new – that retains all the benefits of the internet, while avoiding all of the drawbacks – what would that look like?

Many of those who operate the internet today – and even those who played a major part in its original design – are attempting to answer this very question, with some interesting results.

Sir Tim Berners-Lee, the inventor of the world wide web, leads Solid, an MIT project that proposes decoupling ►

- applications from the data they produce. Solid is both a form of self-regulation and adaptation of the internet.

Solid was founded in response to the growing hegemony of the big internet players. Facebook, for example, now has over two billion active users – it is effectively the filter through which nearly two thirds of the world's internet users access the internet. These platforms control much of what is done on the internet and their platforms are accessories to the widening problem of 'fake news'.

The ambition of Solid is to self-regulate the internet by changing the way data is handled. Today, most internet companies require you to hand over your data before you use their services. For example, every picture you post on Facebook belongs to Facebook because the company is the one that stores it. By contrast, an application built on the Solid infrastructure will ask users where they want to store their data – with the application requesting access to it. The crucial difference in this scenario is that data remains in the ownership of the individual, not the application using it. While you may decide to store your data on Dropbox, it remains always under your control,

a piece of information, you leave it to the network to find it. It will more likely be much closer to you than a remote server somewhere.

The advantages of the ICN is a reduction in latency – since data would be accessed from a location much closer to the user – but it can also improve trust because it removes the ability to use fake URLs, a common tactic for deceiving users with fake websites used for phishing attacks or distributing fake news. These are two very significant improvements.

WATCH THIS SPACE

Solid and ICN are just a couple of the possible examples of self-regulation and technical changes that can be made to the internet in order to reform it. The heartening point of all this is that those responsible for the internet are also the ones looking to improve it. Self-regulation is already happening.

As visionary internet pioneer, John Perry Barlow (author of, amongst other things, *A Declaration of the Independence of Cyberspace*), once said: "[A] good way to invent the future is to predict it." This might sound

"Facebook now has over two billion active users – it is effectively the filter through which nearly two thirds of the world's internet users access the internet"

and you can prevent the application from accessing it at any time you choose.

And this isn't the only technical solution devised by those who operate the modern internet. In December 2016, Google, Facebook, Twitter and Microsoft also unveiled an information-sharing initiative to tackle extremist content on the internet. They pledged to work together to create a database of unique digital fingerprints (hashes) for videos and images that promote terrorism, so that when one firm flags and removes a piece of content for featuring violent terrorist imagery or a recruitment video for example, the other companies can use the hash to remove the same content on their platforms.

Another technological solution to the internet's challenge is being devised by the technology research company InterDigital. Its ICN (Information-Centric Network) proposes to eliminate the client-server topology that is responsible for much of the latency and duplication of data experienced across the internet.

An ICN-based internet would do away with URLs (Uniform Resource Locators) that tell us where on the network the information is and swap them for URIs (Uniform Resource Identifiers), which tells us what the information is. The contrast here is that when you want

slightly naive in today's world, where the freedom of the internet is the centre of such a huge ongoing debate, but it might just turn out to be true.

Self-regulation might not be a perfect solution just yet, but it is still better than knee-jerk legislation that could stifle creative and commercial innovation and infringe upon people's civil liberties.

Through the spirit of openness and collaboration – principles that are so core to the internet itself – I am confident that the technology-led, self-regulation solutions being proposed by those in the industry will be delivered far more quickly and effectively than any government-led approach.

The internet will continue to regulate and redesign itself. It has never stopped evolving to address its challenges. By continuing to do so, it will manage to find its own solutions. ■



Simon Yeoman is general manager and financial director at Fasthosts. He is an active advocate for trust and transparency in the industry. Follow Simon on: @siyeoman

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Joe Leech

Words by Oliver Lindberg

Psychology can be applied to UX and UI design to create better products – but only when used responsibly. Consultant Joe Leech discusses psychological principles, best practices and the ethics involved



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> “A designer who doesn’t understand psychology is going to be no more successful than an architect who doesn’t understand physics,” claims UX consultant Joe Leech, who has made psychology for user experience and product design his speciality. There is absolutely no doubt that data and testing are important and that they help you look at trends on a large scale but it’s quite hard to determine how individuals think and behave with data alone. You need to understand how the brain works to design products, apps and websites that match human behaviour.

“The best and most successful teams I’ve seen look for ideas in psychology,” Joe explains. “It can help generate solutions to particular problems like the number of items to put in a navigation menu in an app. Psychology can give you a clue about that number and then you can do some multi-varient and AB testing on the back of what [that] told you to [...] prove if it was a good idea or not. They’re definitely complementary. Data will tell you that something is happening and that something is wrong. Psychology can tell you why.”

Joe helps his clients – startups and big, established businesses alike – to improve their products. “I call it product innovation,” he explains. “It’s taking an existing product and trying to shift it to a better place. I use psychology to do that, as well as research and my 14 years of experience.”

Certainly Joe has plenty of expertise to bring to the table, having studied neuroscience at the University of Sussex before earning the opportunity to study for a PhD in snail brains. Deciding he didn’t really fancy specialising in the minds of molluscs, he instead spent five years abroad teaching English as a foreign language before enrolling in a master’s course in human communication and computing at Bath University. After working at a couple of web agencies and anticipating how important the discipline would become, Joe began to plough his own furrow in the art of user experience. He wrote the first version of the *Psychology for Designers* pocket guide (<https://mrjoe.uk/psychology-for-designers/>) in 2013 and went freelance in 2015, carrying out work for clients as diverse as MoMA, Disney, Marriott, Trainline and Raspberry Pi.

One of the major benefits of psychology is that it helps with the minutiae of interaction design. “Let’s look at choice” Joe suggests. “If you offer too much choice, people get ‘choice blindness’. The more options you give them, the longer it takes them to reach a decision. People feel overwhelmed. We can look to reduce mental capacity and apply Hick’s Law, which predicts, based on the number of choices you offer to the user, how long it’s going to take them to make that choice.”

If you then also use price-framing theory to show a product that is more expensive and one that is cheaper, you are creating the frame in which the user views the price of the item – neither expensive, nor cheap. Both of these psychological principles should increase sales.

And psychology doesn’t just help you design micro-interactions; it can also help you use mental models to tackle big experience-design problems. “If you design a website or app for, say, buying shoes online, you model it around how your customers would expect to buy shoes in the real world,” Joe advises. “You’re going to have much more

Photo: Jon Tan





Photo: Marc Thiele

success than if you're just copying the way Amazon do it and taking a cookie cutter approach to it. When people buy shoes, they'll pick them up and do things like judge the waterproofness by the quality of the stitching. That gives you a clue. If you're designing a page for selling shoes, you will want to include a zoomed in picture of the stitching, so [customers] can see if it's waterproof or not.

"Another example would be how people buy washing machines online," Joe continues. "They don't trust bullet-pointed feature lists: they look for zoomed in pictures of the control dial as it will tell them what the washing machine can do. Understanding these mental models and what people actually look for is going to help you transform your website. The biggest effect by far that I've seen in terms of drastically changing the metrics and improving sales, up to a double digit increase, has been through such mental models."

Apart from product innovation, Joe also consults with his clients on product discovery, helping them make the progression from idea to prototype to product as quickly and efficiently as possible. He also gets involved in crises, for example when a high-profile site has launched but the numbers have gone wrong, or the relationship has broken down

between management or client and the team delivering the site.

A prime example of how psychology can be applied to averting large-scale crises came a few years ago when Joe was working with eBay on its search results. The company was just about to shift from offering buyers items from the UK only to items from the whole of Europe. "They worried that the inventory increasing by about 20 times overnight would overwhelm people," Joe remembers. "So we turned to psychology to understand how to redesign the search interface and modelled the interaction based on an idea called procedural memory. Everything we learn we typically include in a sequence and create context around it. So when we looked at the procedural knowledge flow for designing search [functions], we analysed the steps that people go through on a micro level to search for something. For example, they automatically look for a search box at the top right of the page."

Joe and the team also used an eye tracker to understand what people were looking at and found that they used the search filters

as cues. "They just wanted to know if the filters were relevant to their search," Joe explains. "So if they searched for a football shirt, and the search filters didn't include the word 'size' they'd wonder if it was the right search. We also spotted that they would use the length of the scroll bar down the side of the browser as a cue to understand the [quantity] of search results that were there. If the scroll bar was quite short, it would tell them that there [were] lots of search results. We found that most people were taking [in] these cues in the first half second that they looked at the page! They weren't aware

that they were doing it: they were quickly scanning through and it was almost happening at a subconscious level."

"Data will tell you that something is happening. Psychology can tell you why"

In his psychology workshops (dates are coming up at Pixel Pioneers Bristol and SmashingConf Toronto in June, as well as Mind the Product in San Francisco in July), Joe teaches a framework for understanding how to use psychology to improve your product and design processes. But he doesn't shy away from covering the dark arts of persuasive design and exploring the ethics involved. ►



Photo: Richard Wiggins

► “It’s important to know and be aware of how it works”, he cautions. “You can use things like the scarcity effect: on Booking.com, for example, it will tell you that only two rooms are left at a certain price. Or the bandwagon effect, another psychology technique that suggests you’re more likely to buy something because everyone else is buying it. You’ll see things like ‘25 people are looking at this item right now.’”

But while these techniques can work, you may find that the return they offer doesn’t really justify the cost. “There are a lot of little things you can do to make people buy or click on something but they only have a very small effect in terms of the overall conversion numbers: you might only see an 0.01% increase in sales,” Joe warns. “For Booking.com that’s fantastic because for them that’s still a large return but if your sales volume is relatively low, it won’t have much of an effect. Also, all of these things create a tiny bit of anxiety. They’re making people feel emotionally a little bit tense, and I don’t find it particularly acceptable that we’re playing with [their] emotions. I find it all a bit murky. We shouldn’t be pushing that as a way to increase sales; it’s a terrible way of running

a business. All it’s going to do long term is [encourage] our customers [to go] somewhere they’re comfortable and happy, not somewhere that’s going to make them feel slightly anxious.”

Joe freely admits that he’s used such techniques in the past and has learnt for himself how unpleasant dwelling in this grey area can be. At the start of his career, he worked for a major UK bank on a project to redesign a credit card application process. At the time interest rates were low and banks were making money on selling insurance that protected the applicant against illness and unemployment. The commercial focus on selling these products led to a lot of pressure on him as a designer to use psychology in order to influence uptake. “I felt uncomfortable,” he remembers. “So much so that I held ideas back.” Since then, the UK government has ruled that the practices of the time were unlawful. “The lesson I learnt was it was important to know your boundaries, to not get involved in projects that had the potential to use design for the wrong ends. It spurred me on to develop my own code of conduct: don’t trick, don’t cheat, don’t lie, provide positive benefit.”

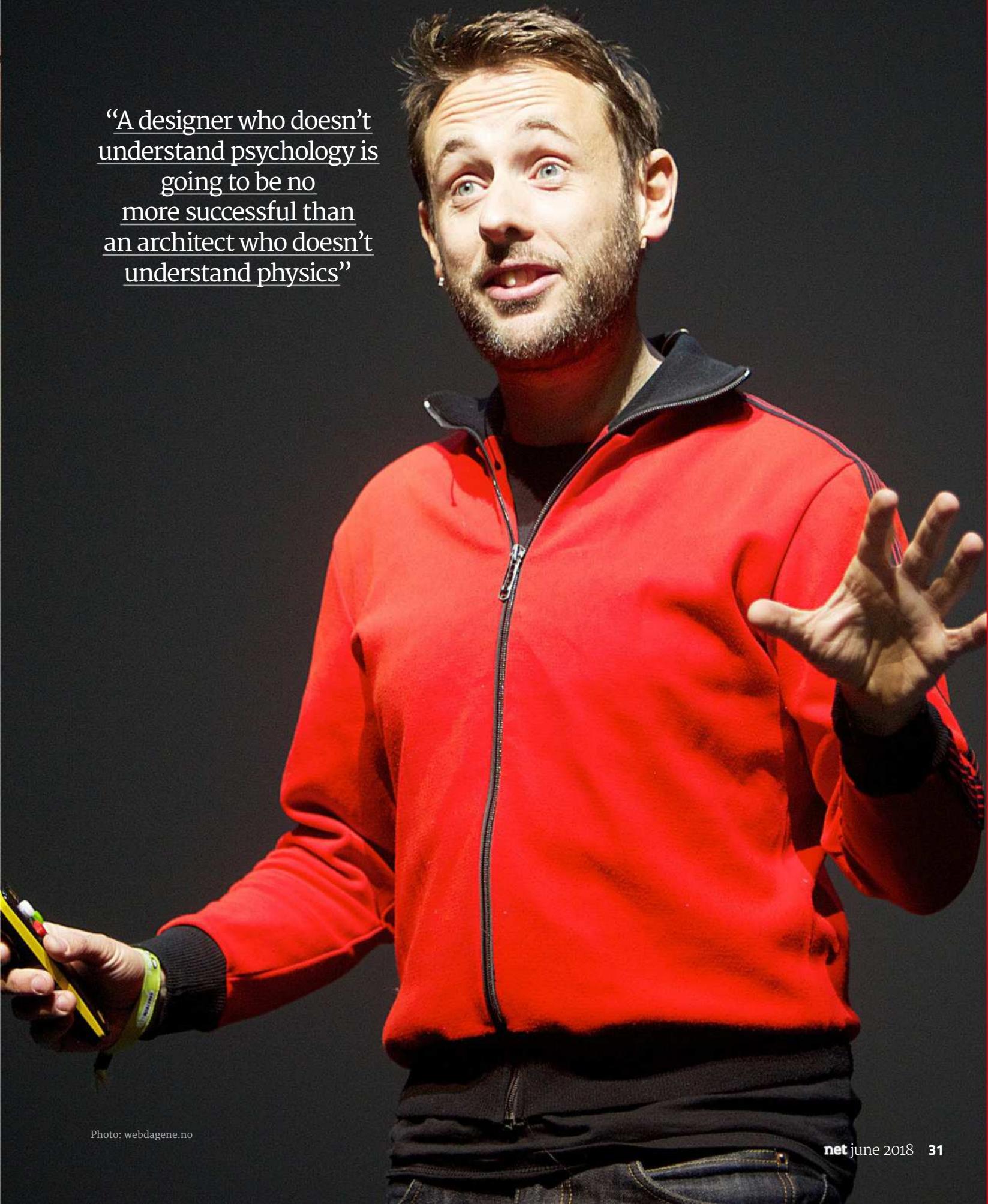


Photo: 2018.websummercamp.com

And this desire to use psychology to bring about beneficial design experiences has evidently borne fruit: Joe has just founded his own startup that aims to do just that. “We’re looking at the complexity of family lives and the problems parents have in keeping on top of it all,” he explains. “The theory behind it, shared social cognition, refers to how we hold pointers to information that other people have in their heads. We want to support the conversation between you and your partner [and ensure] you’re both aware of what you have to do, so you don’t leave the kids at school because you both think the other person is picking them up, for example. We’re building an app called Our Canary to help link data shared across a family. It’s a tool to share the cognitive load – the total amount of information your working memory can handle – that sits inside of everything that you already use like Facebook Messenger and Alexa.”

Psychology, it transpires, goes hand in hand with UX. It’s indispensable if you want to fully understand your users and create products to improve their lives. And who would want to be an architect that doesn’t understand psychology? ■

"A designer who doesn't understand psychology is going to be no more successful than an architect who doesn't understand physics"





★ THE DESIGN OF BUSINESS

FOCUS

Christopher Murphy stresses the need for focus as you begin to build your product roadmap



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> With your business launched and – hopefully – successful, it's tempting to start to establish plans for expansion. In my article 'Repeat' (net #300) I stressed the need to develop new products or services to ensure that you have a pipeline of products. As I noted:

"A single product will only maintain momentum for so long and, as such, over time you'll naturally see a fall-off in sales. This is where building a 'pipeline of products' comes in. The secret is to release new products often and maintain contact with your customer base."

Adding new products or services to your mix will help to drive sales. However, it's important that you don't lose focus by adding new products that don't fit with your overall brand story.

Businesses often fail as they grow due to a loss of focus. As more products are added to the mix, the underlying vision and values of the business can become diluted. This can lead to confusion in the minds of customers about what your brand stands for and what its purpose is.

Branching out in too many directions, especially if you have a small team, leads to a lack of focus and

puts a strain on your resources in terms of time, attention and money. This is why focus is critical.

The more products or services you add to the mix, the more time and energy you need to devote to them and by spreading yourself too thin you run the risk that all of your efforts underperform. In the worst case scenario, this can lead – ultimately – to the failure of the business.

A FOCUSED MISSION

As you plan a product roadmap be sure to constantly check in with your values and vision, ensuring that what you are working on remains aligned with your original mission.

Using your original vision as an anchor, it's important to establish an overall strategy with a clear sense of direction. This vision – drawn from your values – is unlikely to change over the medium term and it's important that you stick to it.

This is where a mission statement, even if you're a small company, can help. If you've taken the time to create a mission statement, you can check against it as you develop new ideas for products. If a new product doesn't fit the mission, you know you need to rethink it.

My focus at Tiny Books (www.tinybooks.org) is simple: "To help others build better businesses by providing digital tools for digital entrepreneurs". This short sentence, which took a considerable amount of time to write, is the result of distilling and defining my mission.

As I work to develop new products, I check back against it and – if the fit isn't right – I start again from scratch. Adding new products that aren't a fit with the mission statement will lead to confused customers and confused customers tend to seek alternative solutions.

As you build your product roadmap, it's important not to lose sight of focus. As David Hieatt of Hiut Denim puts it: "Do one thing well". If you focus on doing that your customers trust in your brand will grow and you'll find yourself reaping the rewards. ■

The screenshot shows the Hiut Denim website. At the top, there's a navigation bar with links for 'HOME', 'ABOUT DENIM CO.', 'SHOP MEN'S', 'SHOP WOMEN'S', 'OUR STORY', 'BLOG', and 'NEWSLETTER'. Below the navigation is a large image of three women wearing black denim jeans and shirts. Overlaid on this image is the text 'Do One Thing Well.'. At the bottom of the page, there are sections for 'Men' (listing 'Four Way Regular Slim Slim', 'Normal Straight', and 'Tapered') and 'Women' (listing 'Four Fit Skinny High Waisted', 'Straight', and 'Tapered').

Hiut Denim is focused on one thing: denim. This focus is encapsulated in its mission to: "Do one thing well"



★ Q&A

MICHAEL FLARUP

The Danish designer and entrepreneur explains why being childlike leads to successful web projects

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You've launched a lot of your own products. Which are you most excited about right now?

I'm super thrilled with my new resource platform applypixels.com, which is a place where we create industry-standard design tools for icon and UI work. This is empowering both veteran designers and newcomers, as we give them downloadable UI and icon templates, allowing them to jump over technical obstacles and get results faster. Being the canvas for other people's creativity excites me.

I'm also very happy with the work I'm doing with my little game studio, Northplay. We're following our hearts and making games and entertainment products. The standout right now is Conduct-Franchise at conductthis.com.

What makes you so entrepreneurial?

A guiding light of my career has been a childlike pursuit of creative work that I genuinely think is fun. You'd be surprised by how many people don't do this. Some aspect of this always makes it into my talks and I usually present two circles to the audience. One I call 'The Circle of Fun', where I demonstrate how

positive reinforcement of side projects and work that you find interesting helps you generate more work of that nature. On the next slide, I unfortunately present 'The Circle of Boring', which shows how the type of work we're doing, even if we find it uninteresting, has a similar reinforcement.

Most people think that the good projects are just around the corner, but that's not how it works. I think it's important to occasionally stop and look in the mirror to see if you're in the right circle.

How do you get inspired when your creative batteries are running low?

I thrive on being involved in multiple projects. Staying busy and juggling multiple challenges fuels my creativity. The way we solve a problem in one project might inform a solution in another. You become better at formulating the task at hand, at framing the creative challenge, and at actual problem solving and execution.

Working on many projects also helps me avoid burnout. This might sound counterintuitive, as one always needs to be mindful of commitments and stress. However, by switching from one creative battle to the next, I find I'm more invigorated than when I spend a long time on the same challenge.

What made you decide to give workshops on designing app icons?

Icons are the most important visual aspect of a brand the user interacts with. It's what everyone thinks of when they think of your product. No other aspect of design plays such a major role in people's perception of – and relationship with – a product.

But maybe more important, icon design is essentially design distilled. Most of the qualities of a good icon are universally applicable to every discipline out there. So by mastering something as specific as icons, you're training in almost all aspects of good design, namely working to create great results under constraints and making something that is recognisable, scalable and appealing.

So my workshops geek out over icons and we get to play around with tools and terminology to improve our skills in iconography. But what the participants are really learning is much bigger.

What's the design scene like in Copenhagen now?

A lot of new people are coming into the industry and the startup and design scene is booming. Eight years ago, we struggled to get 20 people together for a creative meetup. Today, events with hundreds of seats sell out in an afternoon. I run the largest design Slack channel in Denmark (<http://www.designdk.org>), and it's been amazing to see the community grow. ■

* INSPIRATION

WHICH RECENT BOOKS HAVE INFLUENCED YOUR WORK?

Read any good books lately? Our experts have, and they share them here



AMY PARKER

Co-owner,
Fore Design
foredesign.co

 It's been out for a few years but I just read *Design is a Job* by Mike Monteiro. It's basically a compilation of every wrong decision I've ever made in my decade of running a business but it was also a major confidence-booster. I've learned all the lessons of what not to do that Mike outlines in the book and figured out what to do instead. If you're just setting up shop – or even if you've been running a business for a while, like me – it's well worth it to learn from Mike's mistakes and get yourself on the right track.



DAN PERRERA

Co-owner,
Fore Design
foredesign.co

 Anthony Burrill's *Make it Now* is not only a beautiful compilation of his work throughout his career – and even some student work from back in the day – it's a great inspiration to find your own voice. He has a wonderful writing style – short sentences that get right to the point – which made the book a real pleasure to read. Most importantly though, it was a real motivator to bust through my doubts and get started on a project – now.



INAYAILI DE LEON PERSSON

Product principal,
Make Us Proud
www.makeusproud.com

 *Technically Wrong* by Sara Wachter-Boettcher. It's about the biases, mostly invisible, that permeate the design and engineering of the software we create and use. Technology designed without considering the ways it can affect people from a multitude of backgrounds can sometimes have devastating consequences, as the book explores. Reading it has reinforced the idea that, as designers, we must actively strive to create products that are inclusive and truly consider the impact they will have on society. Since I read it, I always try to keep that in mind, in meetings, workshops, conversations, and to be vocal about those issues.



LAUREN KELLY

Founder and design psychologist, Dura
dura.studio

 *Inside the Nudge Unit* by David Halpern tells the story of how a team of behavioural economists set up the government's Behavioural Insights Team and went to task aiming to help people make 'better choices for themselves'. I read this book at an important time; I was thinking a lot about psychology and design and how both seemed to be siloed. Reading this book solidified my ideas that behavioural insight should – and could – be brought into the design process. It led me to start my studio specialising in behaviour design and design psychology.



WARREN CHALLENGER

Senior designer, JH
wearejh.com

 Like many other designers, I've had frustrations convincing certain clients of the value of UX resources and time on projects. *The User Experience Team of One: A Research and Design Survival Guide* by Leah Buley reminded me that I'm not alone in this fight: larger projects and budgets suffer in the same way. In the book, the author talks you through exercises and teaches you only to do what you need to complete your goals. You can achieve a lot when you remove the formal process: be more flexible and cut to the chase.



SUSH KELLY

Interactive designer,
Imaginate
sushkelly.co.uk

 As a designer/developer I tend to find myself reading technical books. For a change, I decided to try *The Subtle Art of Not Giving a Fuck* by Mark Manson. I've had as many aha moments reading it as I would when reading a book on something like CSS Grid. With the constant stream of information from social, it's easy to compare yourself with the prominent designers and developers you see. Not everyone can be exceptional: once you accept this and set your goals appropriately, life becomes much more satisfying. We have a limited amount of fucks to give in life; this book has helped me start to choose them wisely!



DANA JAMES MWANGI

Founder and branding and website strategist, Cheers Creative
cheerscreative.com

 *The 22 Immutable Laws of Branding* by Al Ries and Laura Ries is hands-down one of the most influential books in my career. It was a huge shift in mindset for me, changed my company's approach to web design, and increased the value of our offerings. Just as Mercedes owns the word 'luxury', we want to help brands own a word in the minds of consumers. From aesthetic choices like colours and typefaces to tone of voice, *22 Laws* helps us develop website strategy and design for clients with this aim in mind.

RESOURCES

DON'T MAKE ME THINK: A COMMON SENSE APPROACH TO WEB USABILITY BY STEVE KRUG

 If you work in web design and haven't read this classic tome, make sure you correct that ASAP. Basically the bible of web usability, it's written in a concise way that makes it easy to consume on your commute.

STEAL LIKE AN ARTIST: 10 THINGS NOBODY TOLD YOU ABOUT BEING CREATIVE BY AUSTIN KLEON

 This bestselling book should be on any creative's shelf. In it, the author dedicates each chapter to one of the ten basic principles to boost your creativity. Fun and inspiring, you'll come back to it time after time.

THE ELEMENTS OF TYPOGRAPHIC STYLE BY ROBERT BRINGHURST

 Before you understand the technical aspects of typesetting on the web, you have to understand the principles underpinning it. First published in 1992, this beautifully written manual sets out the history of typography and is a practical guide to its use.



★ WORK PRACTICES

A MATTER OF TIME

Julia Roberts questions if we are giving time the value it deserves

We have been trained to look at the world and our lives in terms of resources: the finite and the infinite, scarcity and abundance. Supply and demand is a primary driver of modern society. Yet one of the most valuable resources is one many overlook: time.

This is not to say that we don't think about time at all – as the saying goes, time is money. Especially within the world of e-commerce web design and development, we go on and on about the consumer, leveraging technology to capture their time through new innovations and services, push notifications and social media. And we also design to save them time by removing friction in user journeys and adding personalisation and customisation elements to streamline their experience.

But this doesn't mean that we are actually valuing time. It is still primarily seen as transactional, not meaning-filled,

and definitely not given the merit of other limited resources. How does this narrow perspective limit us creatively? This line of questioning is particular intriguing when you shift perspectives, taking a step back to the creatives who shape these consumer journeys and capture their time.

What's being done to ensure that designers' and developers' user experiences with their primary tools of the trade are being empowered? Does our quest to save this limited resource called time reach into their worlds, and how much do we pay attention to the time that designers spend doing something, outside of the lens of the client or consumer? We tend to look at the time they spend on something in terms of not their time, but the clients' – and subsequently the end-users'. While this makes perfect sense from a business point of view, this perspective may end up limiting us in the long run.

So what kind of tech is enabling these creatives to make the best use of their time – or, alternatively, how is their time being wasted and what is the ripple effect this has on the products they are creating? How can we value and empower them for the sake of their creativity and time, outside of the transactional results?

An essential part of the process is actually diagnostic, asking: are the processes being used creating value? How are we measuring this value and what role does time play? Is it empowering our time or draining it? It means taking a step back, and finding a balance between functionality and productivity, quality and creativity.

If we want to get practical, think about something as simple as tech compatibility. For example, our designers have historically worked on Photoshop, but transition over to Sketch for various projects. However, moving from one to the other isn't as simple as exporting a PSD from one platform to the other, and barriers like these not only suck time but limit creativity.

Additionally, we build most of our presentations in Keynote, yet when it comes to sharing them across offices or with various clients we need to convert it to a PowerPoint, which often messes with the formatting. Yes, maybe we should choose one tool and stick with it, but on the other hand it's 2018: shouldn't our technology be more seamless than this?

These are small, simple examples but how much time do they waste and, more importantly, what kind of limits do they place on our creativity? When we get constrained by simple things like this, it's easier to continue filtering creativity through a transactional lens, which perpetuates the cycle.

Maybe as we start to think about time differently we will change the way that we utilise technology to start embedding value, meaning and intentionality in a different way. Time has as much worth as we are willing to give it. ■

PROFILE

Julia is a marketing executive at Like Digital. Among various marketing-based activities, she is passionate about enabling creative communications in business and commerce.

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†UNFAO, Global Forest Resources Assessment 2005-2015.

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Build the perfect career in web design with our career special. Land your dream job, expand your skills et and become indispensable

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#303 MARCH 2018

A pro guide to all the best tools in web and UI design, 10 expert ReactJS tips, the 5 best code editors and Blockchain explained



#302 FEBRUARY 2018

50 Amazing Dev Tools for 2018, plus prototyping at Netflix and a free, bumper 20-page Design Trends supplement



#301 JANUARY 2018

Next-gen UX. Revealed: how to design for the invisible interface revolution, plus master the science of Conversation Rate Optimisation



#300 DEC 2017

Web visionaries investigate what's next for design and the internet in our special 300th edition, plus 30 greatest web moments



#298 OCTOBER 2017

Rachel Andrew guides us through the features of CSS Grid Layout we're not making the most of in a bumper CSS Grid Secrets special



#297 SEPT 2017

Our first-ever accessibility cover looks at how we can design a better web for all, delving into inclusive design principles



#296 SUMMER 2017

The Money Issue: how to survive – and thrive – in an increasingly uncertain world, plus eCommerce, finances and project management



#295 AUGUST 2017

Explore the changing world of SEO, why inclusive design is so important and the ultimate guide to Sketch's latest update

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GALLERY

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CARL CAHILL



Carl Cahill is a UX and UI creative for brands, who was awarded Creative of the Year in the Wirehive 100 2013 and has over 10 years experience.

w: carlcahill.com

t: @carl_cahill

CITRIX

SITE OF
THE MONTH

HOW DO YOU POWER THE NEW MOBILE WORKFORCE?



Citrix is helping Aston Martin Red Bull Racing reimagine how they work at the track, the garage, the factory and everywhere in between. This is how the future works.

INFO SOUND

SCROLL TO EXPLORE

* YOUTUBE VIDEO, WEBGL, CSS3

REDBULL RACING + CITRIX

www.thenewmobileworkforce.com

> This microsite displays and showcases the partnership between Formula One's racing team Redbull and software giants Citrix. It's a really immersive demonstration of gorgeous visual content that has been put together very well.

The site itself operates with very little scrolling and works more like a presentation. You quickly get used to this format and learn that there are five key areas to explore that enable you to go deeper and dive into more interesting content.

Each screen hosts wonderful exploratory features using data visualisation, 3D renderings and video assets. The combination of these mediums really help to make the site less static and more engaging to play with and view.



What I take most pleasure from with this site is that everything has a lovely smooth transition. Clicking through pages, the screen animates nicely. The content appears with a wiping effect as the 3D scene pans and rotates. You don't see many sites doing that!

It's definitely worth a look as nothing is static and you are left exploring more after each screen.

★ CSS3, GREENSOCK, HTML5

STORM LONDON

www.stormlondon.it

> Storm London is the Italian site for Storm Watches and is a beautiful ecommerce platform that's easy to use and visually exciting. On top of that, this site is clean and simple. No fuss, it just concentrates on products without overindulging in imagery or content.

You'll notice there is a lovely use of transitions and animations as you navigate through the site, which make you want to click and scroll around even more. The transitions are a really nice touch to blend interfaces and make the transition of content more enjoyable to watch.

The products around the site are large and clearly defined by an assortment of bright background colours. The colourful backgrounds actually complement them well and also enhance the fun on page transitions when an item's clicked.

As an ecommerce site, it is boldly simple. The products are really clear and there's no need for anything else. The site is a nice reminder that websites don't need to do too much or satisfy every user. It just performs, does a limited number of jobs and does them well.

Terelo
Men's Watches

Colore: Slate
Codice: 47391/SL

The Terelo is a modern, unisex watch and an effortlessly stylish addition to any wardrobe. This unique watch features a large edge-to-edge dial in a bold blue laser finish, on a sleek slate mesh strap. The Terelo also has a handy date feature and is splash resistant. STORM's laser blue may appear different colours under different lights.

Trionic X
Men's Watches

Colore: Black
Codice: 47390/BLK

Dynamix
Men's Watches

Colore: Blue
Codice: 47320/BLU

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TRUSTPILOT



TRUSTSCORE 9.4
759 REVIEWS



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Sign up >

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By signing up you accept our [Terms of Use](#) and [Privacy Policy](#)

Already have an account? [Sign in](#)

* INTERCOM CHAT, CSS3, VIDEO

HABITO

www.habito.com

Habito is a wonderfully designed site built to help you get a mortgage. The user journey in particular is what makes this site so special because it offers a really nice, friendly and personal interface.

Finding a mortgage through Habito feels really supportive thanks to the clutter-free steps. There's also a nice personal touch with what seems like a personal assistant.

For me, this is a great example for the more complex form-driven sites that require information from the user. Habito has clearly thought hard about customer experience, rather than slapping a simple form in front of the user and expecting them to fill it in. Habito has considered each step, serving personalised questions and additional support routes.

HABITO

Mortgage overview

Please confirm that the details below are correct and then hit 'Next'.

What is the purpose of your mortgage?

Buy a house Remortgage

Is this your first property purchase?

Yes No

What is the value of the property you wish to purchase?

£220,000

How much do you want to borrow?

£180,000

How long do you want to borrow it for (in years)?

25

Who are you applying with?

Just me Add another

Save and exit

As a whole the design is consistent through colour and typography. Features like the colourful shapes are used throughout but there is also variation of layouts to make content blocks more interesting. I admire sites like this that serve a very functional purpose but manage to avoid falling into the trap of being too complex.

- 1 About me
- 2 My future place
- 3 Expert help
- 4 Agreement in principle (AIP)
- 5 My mortgage application
-
- My documents
- Invite & earn

Sign in

Raphael Mortgage Expert

Fantastic service

"Fantastic service. I was advised by Raphael and he was very responsive and answered all of my questions. He was able to find me the best product for my situation. I will be recommending this service to all of my friends. Simple, easy and quick."

Keely - Published 2nd October

TRUSTPLOT

THE SWAN MORTGAGE

Welcome to your application

To find you the best mortgage, we'll need to understand a little more about you. Once you've completed your personal details you'll be assigned your own Mortgage Expert who will guide you through the rest of the journey.

10 minutes to complete
Online & open 24/7
No credit check required

Let's get started >

Need help?
Call us or chat

★ YOUTUBE, WEBGL, CSS3

THE GREATEST STORIES RETOLD

<https://retold.withyoutube.com>

> The Greatest Stories Retold is a wonderful creative project by YouTube in collaboration with some fantastic agencies. Stories like *Jack and the Beanstalk*, *Goldilocks and the Three Bears*, *Puss in Boots* and *Snow White* have been completely reimagined.

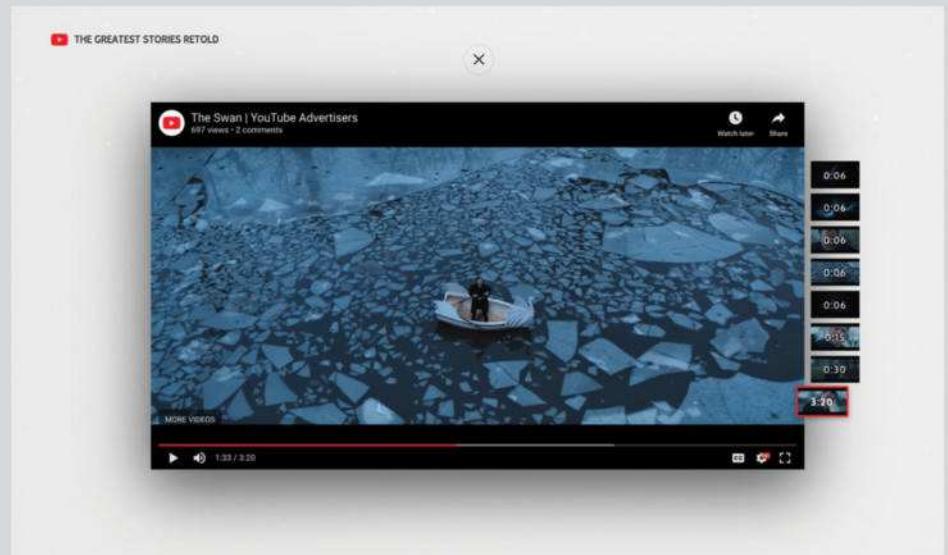
The content is brilliant, showcasing some very clever YouTube videos that are definitely worth the watch.

The website simply houses all of this video content and enables the user to explore these stories one by one. As the

user hits the website, they are welcomed by a title screen, introducing them to the project. This gives you an impression of the look and feel of the site, with large titles and cool 3D renderings.

The transitions between titles are really smooth and as you click into a story the text magically disappears into pieces and brings in the video content.

This site is a wonderful exhibition of great visual content. It's easy to work your way around the videos and understand what it's all about.



MARKETS PASSION FOR LEATHER INNOVATION LEGACY

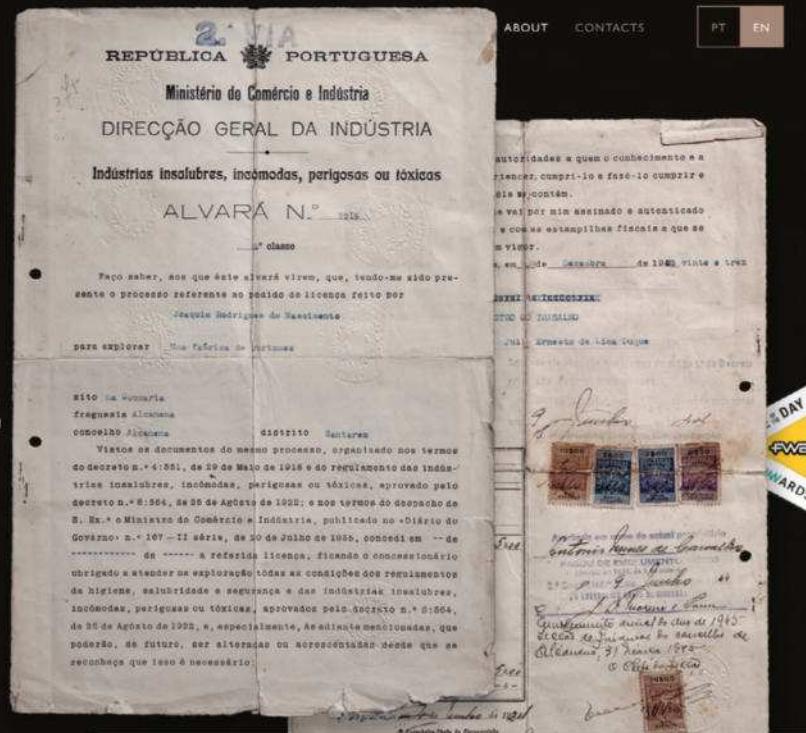
ABOUT CONTACTS

PT EN

78 YEARS of A REMARKABLE HERITAGE

COURO AZUL IS A FAMILY-RUN COMPANY.

WITH APPROXIMATELY 450 EMPLOYEES.



★ CSS3, VIDEO, HTML5

COURO AZUL

<https://www.couroazul.com>

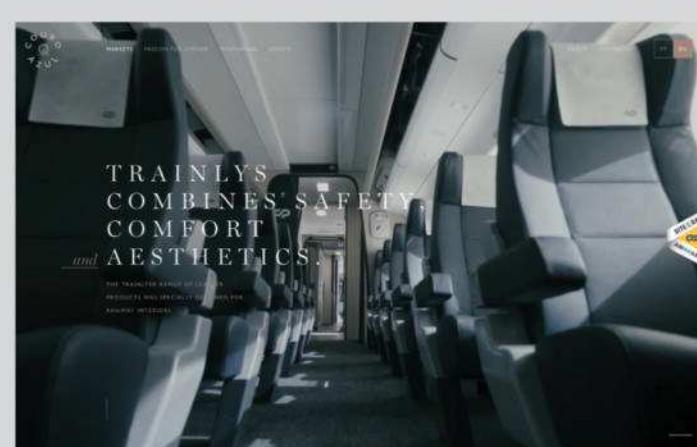
> Couro Azul is a Portuguese company that specialises in the production of leather furnishing for cars and trains. The craft and detail in the production is outstanding and Couro Azul has successfully showcased it here.

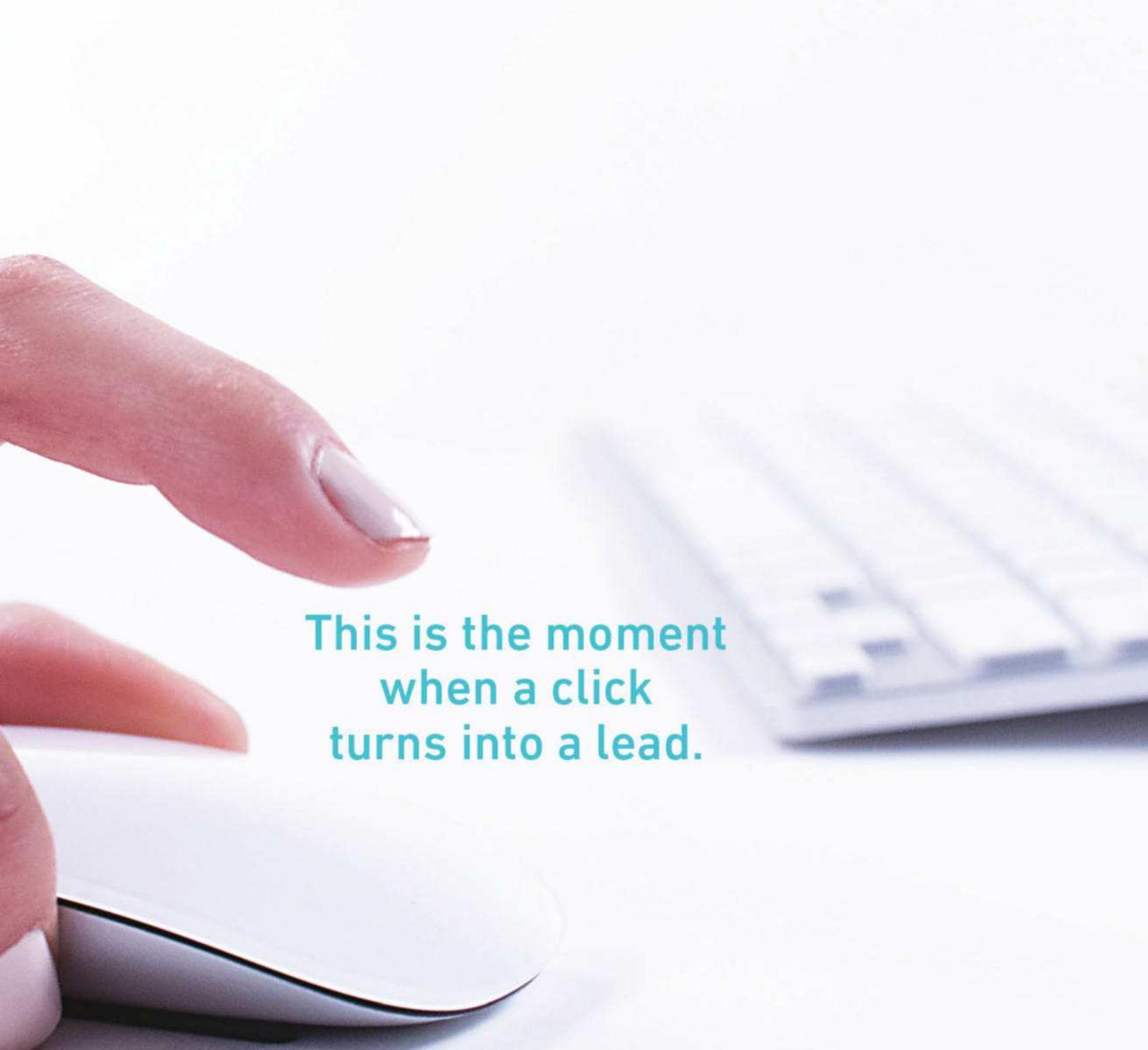
The website is a wonderful arrangement of video, images and textual content. What I love about this site is the various layouts and the overall presentation.

It's too easy these days to have everything in a grid and conform to the commonly used responsive layouts. This website has tried to think beyond this and to instead be more focused on design and presentation.

Magazine layout is a term that's been used to describe the variation of layouts that appear more offset and like columns. This is another close example of that and I respect any site that breaks the grid.

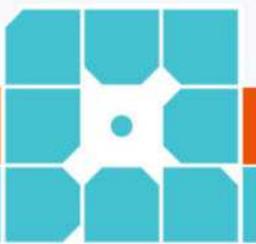
Take a look around and make sure you visit the history page. I love it when brands do this.





This is the moment
when a click
turns into a lead.

PRESS AHEAD



WP Engine's digital experience platform drives your business forward faster. wpengine.co.uk

WP engine®

SHOWCASE

Sublime design & creative advice

THIS MONTH FEATURING...



Photo: C Sheng (<https://www.stormthecastle.co>)

PROFILE

50

365 video tutorials in a year? Yes I'm A Designer is setting itself eye-watering goals in its quest to educate designers



HOW WE BUILT

56

The team from Studio Lovelock reveal how they turned a heavyweight annual report into an interactive data-viz treasure trove

DESIGN CHALLENGE

This month...

HEALTH SPAS

* PROFILES



ALEXANDRA LOFHOUSE

Senior UX designer at Fifteen, with over seven years experience in design

w: www.fifteen.co.uk t: @loftio



PAUL DALY

Co-founder and creative lead at uSkinned, the simple way to launch Umbraco CMS websites

w: uskinned.net t: @daly85



KULTAR SINGH RUPRAI

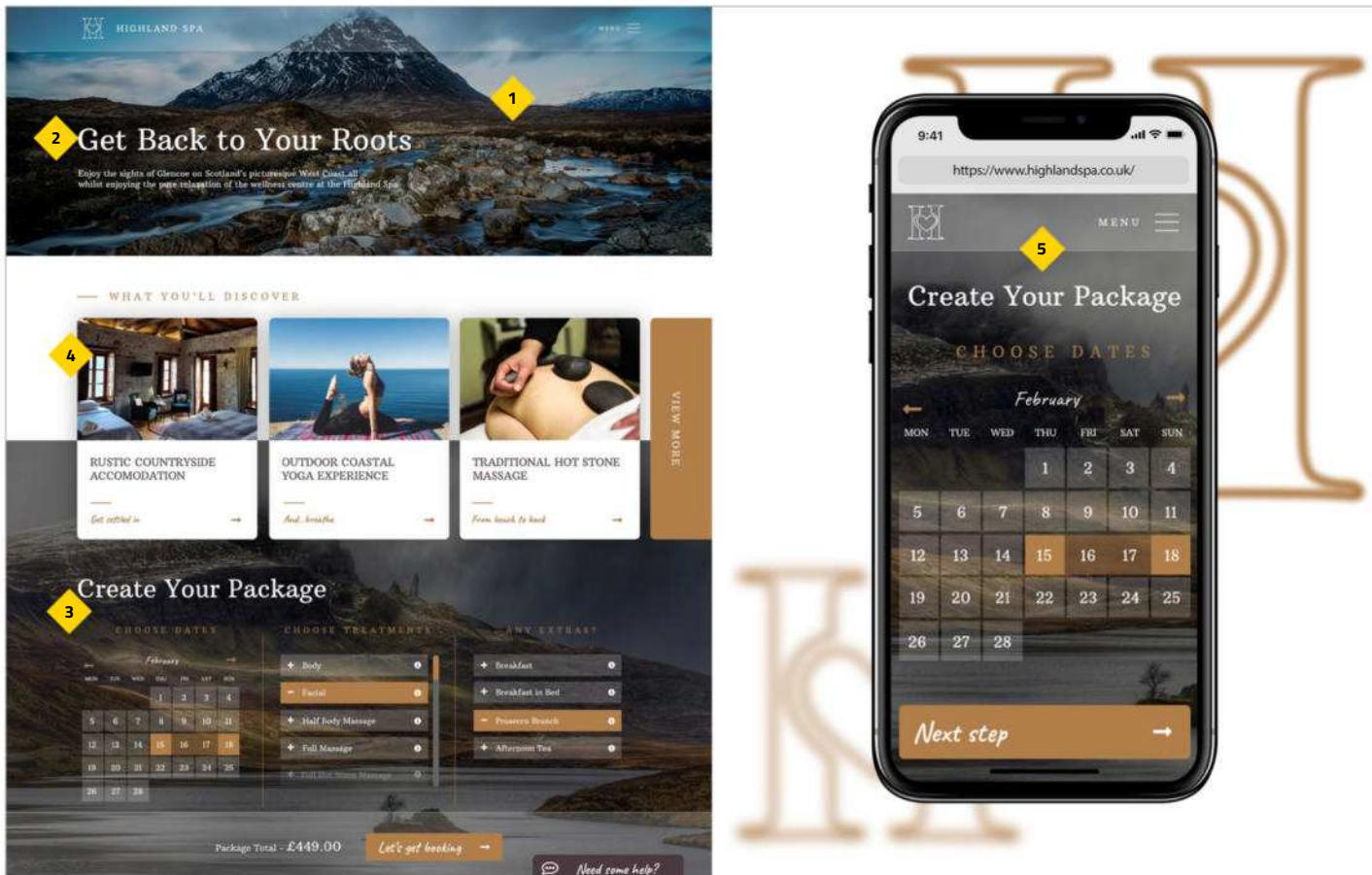
Kultar is a senior digital designer based in Leicestershire, UK

w: www.ksruprai.com t: @KSRuprai



BRIEF

The brief this month is to design a website for a health spa. As spas use beautiful surroundings to create a relaxing experience for their clients, we'd like some of this aesthetic to be present in the website. We also want a functional site that clearly presents all the important information.



ALEXANDRA LOFTHOUSE

HIGHLAND SPA

A special 'package creator' interface helps users customise their stay

> Highland Spa is located in the beautiful Glencoe in the west coast of Scotland. While the spa boasts state-of-the-art facilities and a broad range of treatments on-site, the real appeal of the spa is the surrounding landscape of the Highlands. With this in mind, the website has been created with a visual focus on the location, with large imagery of the views available from the Highland Spa and surrounding landscape.

Straight from the homepage, visitors can use the package creator to view the options on offer, including available dates, treatments and extras. To ensure the site is as transparent as possible, the user is given a package cost as soon as they input their options. They can book straight away from there or enquire further via the live chat function to make sure they're on the right track.

The website also uses a card-based design system to showcase the selling points of the spa, including rustic accommodation, luxury treatments and group days.

CLOSE UP

(1) The unique selling point of the spa is the stunning Scottish location. I've chosen some striking imagery for the hero image and supporting backgrounds on the homepage. (2) Aimed at a millennial audience, the language of the call to actions has been considered to inspire the relaxed feeling that customers will find at the Highland Spa. (3) The main feature of the site is the package creator, giving users a price as soon as they've chosen their options and enabling them to make a decision without pressure. (4) A sliding-card-based system showcases the luxury accommodation and range of treatments available at the Highland Spa. These link through to individual pages dedicated to each selling point. (5) On mobile devices, each stage of the package creator is shown to fill the entire screen. This enables the user to dedicate their full attention to each part of the process of creating their package. Once they reach the final step, they will be given their price and can proceed to booking.

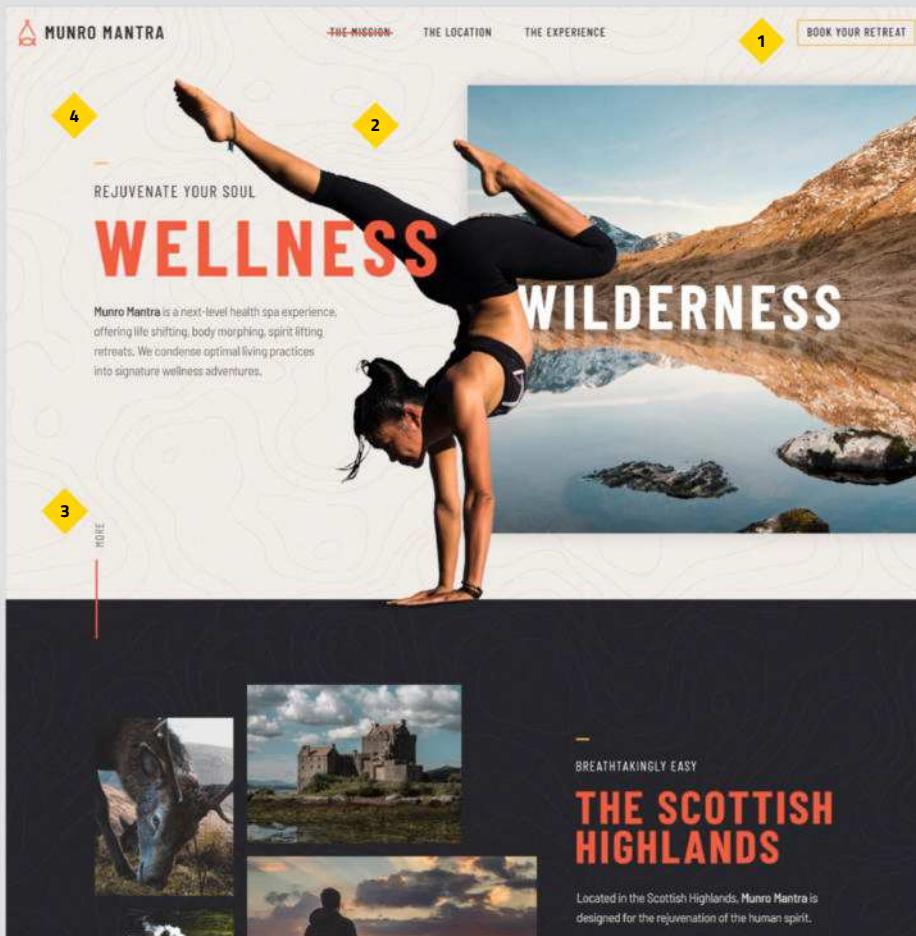
MY MONTH

What have you been working on/doing this month? I've been toying with some ideas for an app offering some mental-health support. Early stages but I've got some plans.

Which two websites have you visited for inspiration? sitelnspire and It's Nice That.

What have you been watching? RuPaul's Drag Race: All Stars.

What have you been listening to? The XCERTS – Hold on to Your Heart.



MY MONTH

What have you been working on/doing this month? Adding the final touches to a website for a US-based research organisation, some redesigns for Ministry of Sound and a variety of updates to our own products.

Which two websites have you visited for inspiration? [unsplash.com](#) and [archdaily.com](#)

What have you been watching? Lots of *Seinfeld* and the latest series of the amazing *Inside No. 9*.

What have you been listening to? King Gizzard and the Lizard Wizard but the latest LCD Soundsystem album has been on repeat, too.

* PAUL DALY

MUNRO MANTRA

A website for a next-level health spa in the Scottish Highlands

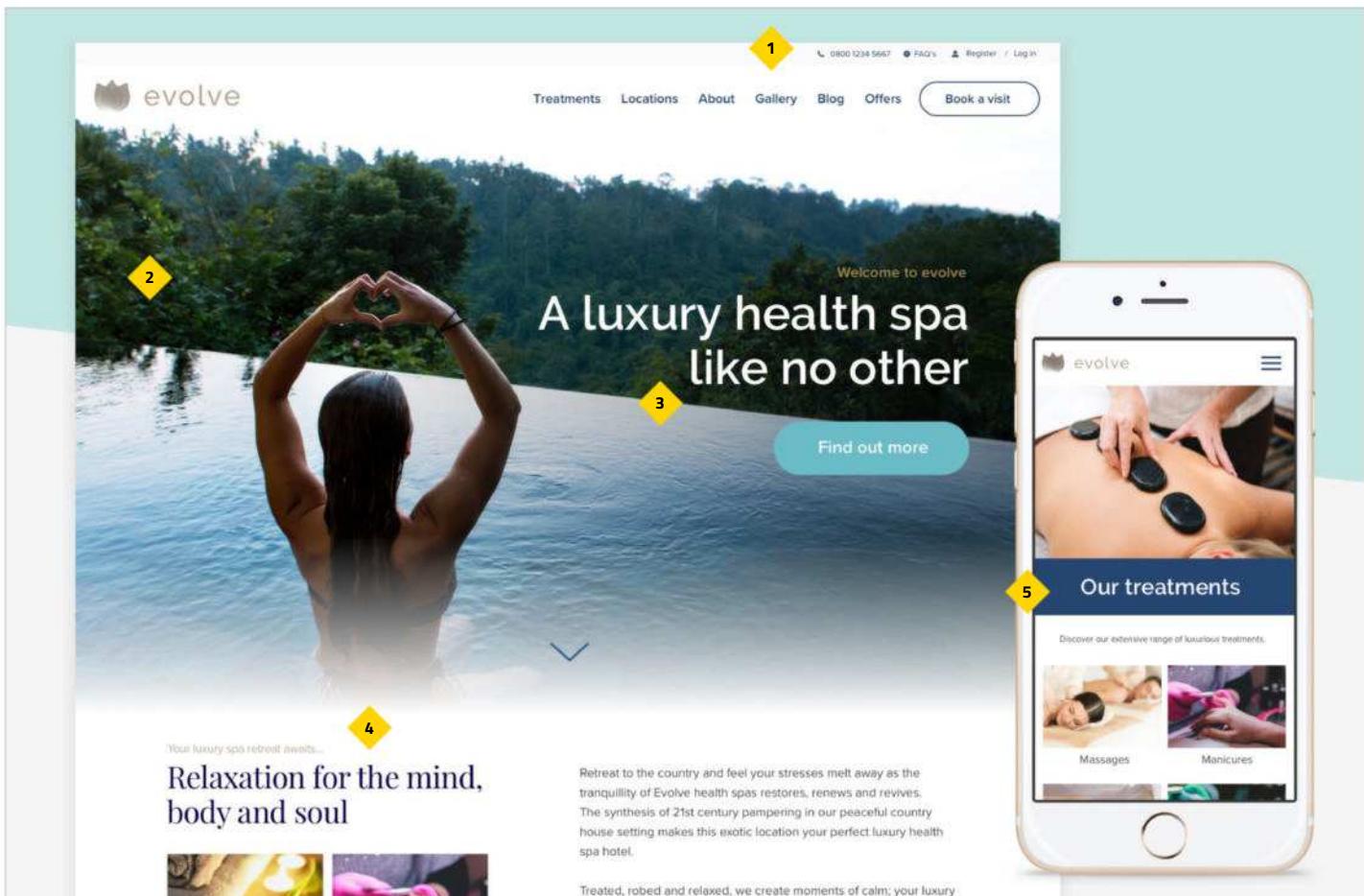
 Munro Mantra is a health spa that provides guests with an escape from everyday life and the opportunity to reconnect with nature and with themselves. Guests have the opportunity to practice yoga, relax in natural pools, unwind with spa treatments and enjoy locally sourced food and beverages, all in the idyllic setting of the Scottish Highlands.

With Munro Mantra, the goal is to create a place guests can rejuvenate their spirits and achieve wellness in wilderness. I was inspired by the rugged beauty and sense of adventure associated with a Scottish Munro and wanted to juxtapose this with the peace of a traditional spa.

Throughout the design, I have used purposeful white space combined with the illusion of a broken-grid layout to further emphasise the contrast between the spa and its surroundings. Ultimately, my aim was for the user to feel transported to the foot of a Munro.

CLOSE UP

(1) The main navigation has been kept deliberately simple and focuses on the key USPs of the health spa: The Mission, The Location and The Experience. Additionally, the primary call-to-action, Book Your Retreat, has been given particular focus in the top-right corner of the design. (2) There is an animated hero-banner that fills the viewport across all screen sizes. The banner will have two states: the first is captured in the visuals and is focused toward wellness. A second banner will switch this around and focus on wilderness and reconnecting with nature. (3) A subtle cue in the bottom-left corner of the banner informs users that there is more content available below the fold. (4) A simple topographic map of the area is used in the background to offer further balance. Although contour lines represent the rugged nature of the surrounding landscape, their flowing, curved form only further emphasise the idea of achieving wellness in wilderness.



* KULTAR SINGH RUPRAI

EVOLVE

Images of the scenery surrounding the spa are used as the main hook on this site

> Evolve is a luxury health spa, offering breathtaking scenery and treatments to help restore, revive and renew clients.

The main banner was key: it had to be impactful yet appear tranquil at the same time. Various images and treatments were tried and presented to a sample of potential users for feedback. The site is aimed more toward women and couples – while not ruling men out.

The overall UI was kept clean and minimal, with a combination of blues and pastels to give a calming yet regal feel. The primary typeface is a clean sans-serif font that has a few unique little curves to add some character. A smart serif font is used sparingly as a secondary typeface.

After the navigation and banner, users are welcomed in with a small section about the establishment before being presented with deeper link options. This enables the page to be functional, yet tell a story.

CLOSE UP

(1) Users have direct access to the main site sections, in addition to contact details. This could have been left out to keep the main navigation clean and minimal but I opted for a more accessible approach. **(2)** This large real estate allows for an impactful first impression and maximises the effect of this powerful photography. This is intended to be fixed, not a carousel. **(3)** Small details such as the curved buttons all subliminally add to the aesthetic of wellness and health, while the gradient leads users down to the content below. **(4)** I opted for a 14-column grid, with a large max-width. This allows for more flexibility and means the content can fill the screen. It also lets us have one column each side of the container to make sure that we have enough white space to let the design breathe. **(5)** For the mobile version of the site, the pages will adapt to an alternative layout that places the beautiful imagery front and centre.

MY MONTH

What have you been working on / doing this month? Designing murals for the office, lots of decorating and plenty of Mario Kart on the Switch.

Which two websites have you visited for inspiration? Muzli Chrome extension is always a good starting point, as is One Page Love. They are usually my go-tos.

What have you been watching? Just finished Vikings and am currently watching El Chapo.

What have you been listening to? Dave East. Nipsey Hussle. Chillhop essentials.



* PROFILE

YES I'M A DESIGNER

yesimadesigner.com

365 video tutorials in a year? Meet the Bournemouth-based company setting itself eye-watering goals in its quest to educate designers

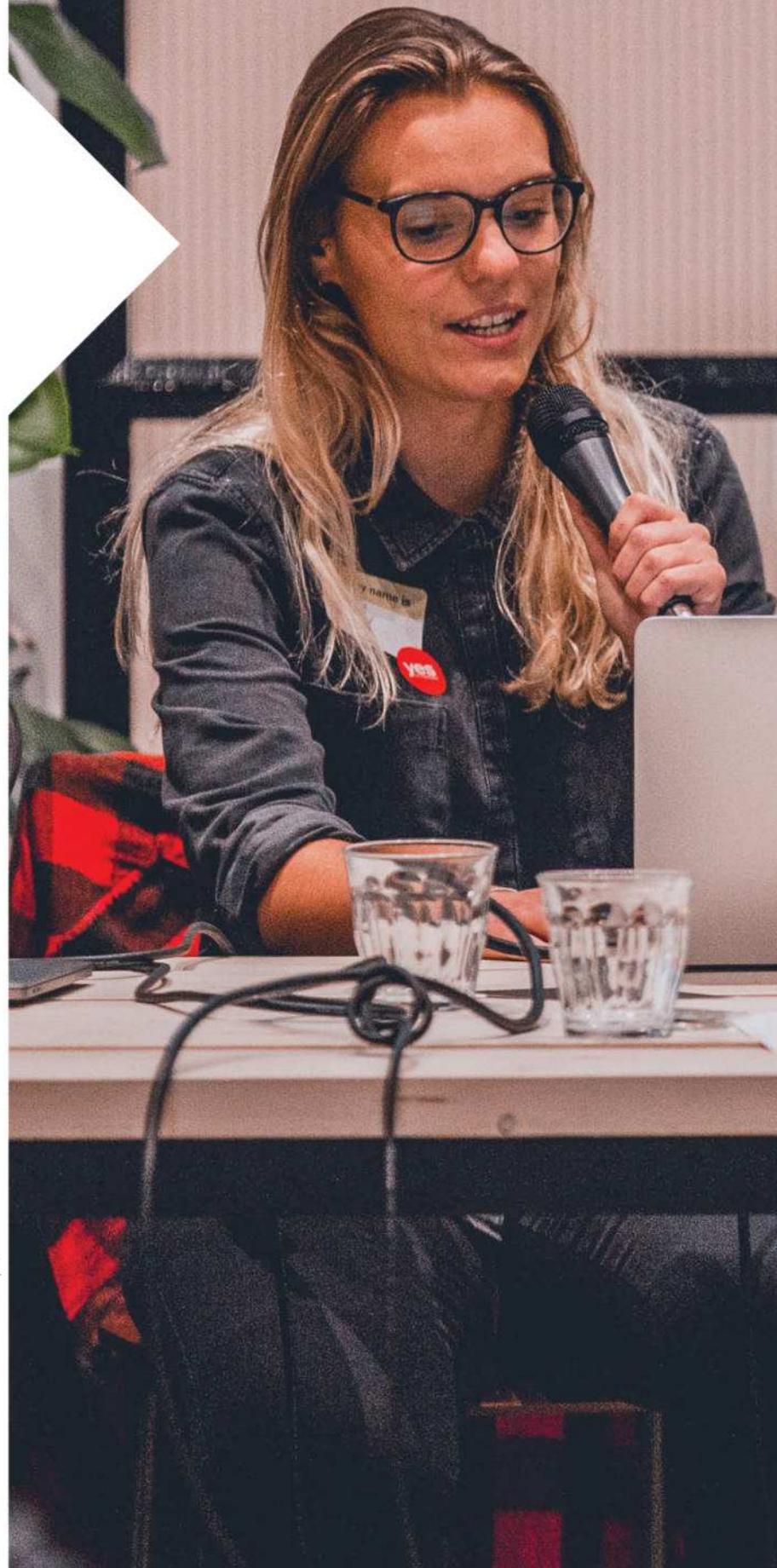
> Starting out in 2010 as a design blog, Bournemouth-based creative company Yes I'm A Designer (yesimadesigner.com) has since grown into a fully-fledged design education hub. Not only does it offer creative and innovative online courses, tutorials, live streams and events but this year it's running its most ambitious scheme yet – a series of 365 daily video tutorials entitled 365 Days of Creativity. We spoke to the team to find out how they do it and how they plan to follow such an enormous undertaking.

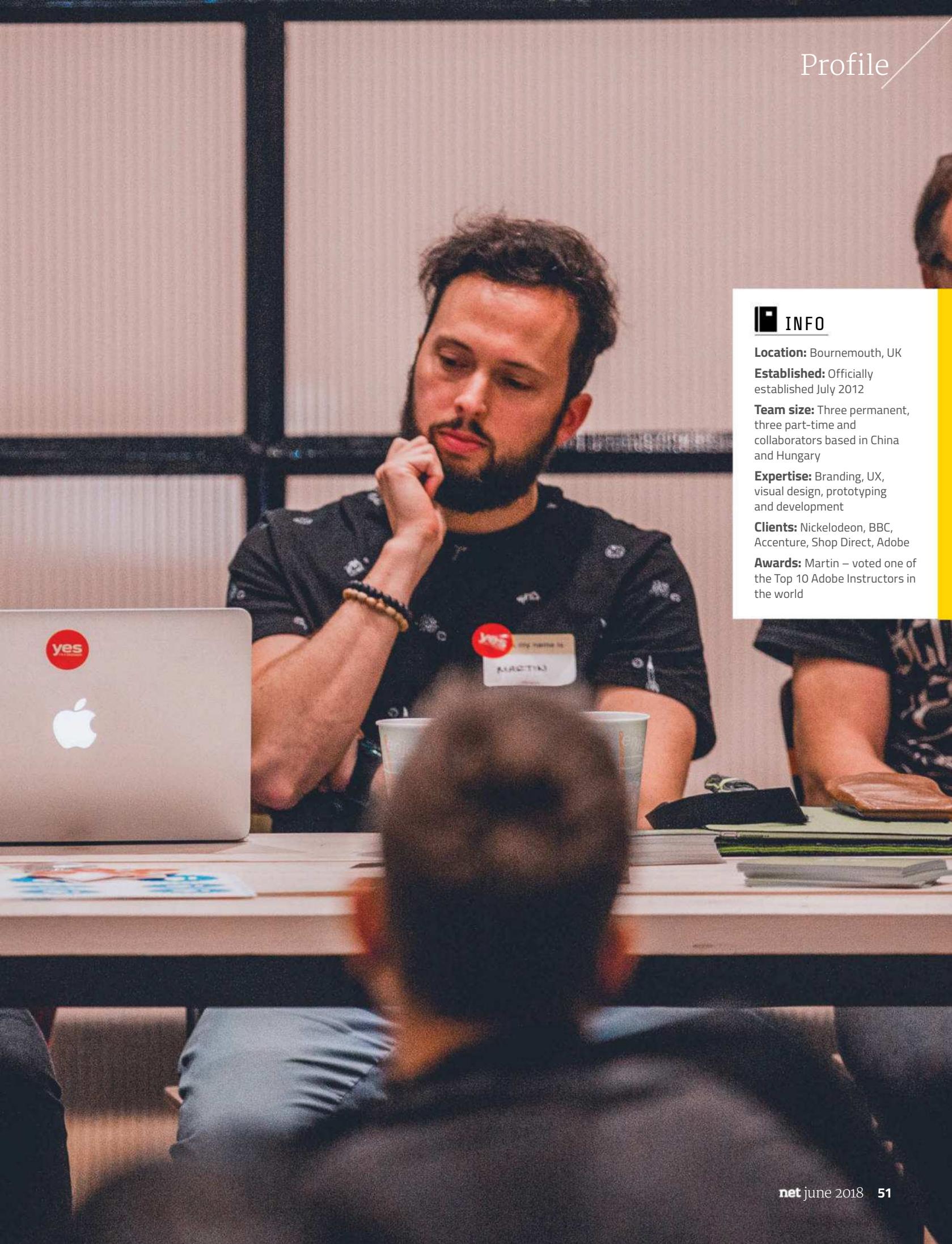
Hi there! Can you tell us a bit about what your backgrounds are?

Martin Perhiniak: I realised early in my design career that I got a real rush from teaching people techniques and skills. There's something about the look on someone's face when they do something for the first time. That's when I started to pursue creative teaching. First by becoming Adobe Certified, then getting loads of classrooms and online experience, which luckily took me all over the world and helped me to build a big follower base online. The combination of these led me to start producing specialist online courses for aspiring designers.

Shumi Perhiniak: I actually never expected to be a graphic designer. When I was

Photo: Loïc Salan (<https://www.loicsalan.com>)





INFO

Location: Bournemouth, UK

Established: Officially established July 2012

Team size: Three permanent, three part-time and collaborators based in China and Hungary

Expertise: Branding, UX, visual design, prototyping and development

Clients: Nickelodeon, BBC, Accenture, Shop Direct, Adobe

Awards: Martin – voted one of the Top 10 Adobe Instructors in the world

► younger I was super creative but unfortunately as I started to grow up I was never encouraged to think of creativity as a real skill. I actually ended up studying politics at university but was never passionate about it. However, at 25 I took a year-long break to follow my creative passions. I learnt everything I know from online courses and enjoyed every second of it, finally doing something I really enjoyed. From here my design career went from strength to strength.

Emily Melling: During my degree in visual communication, I was extremely ideas-driven and loved working with – or just talking to – other creatives. I worked as a freelance designer specialising in branding and loved it but I always wanted more of a sense of purpose. Now working for YES and helping others to learn has given me that!

Can you tell us how Yes I'm A Designer came together?

MP: It actually all started out as a blog. The idea was to share knowledge with other creatives in a relaxed, friendly conversational format. For a long time, YES was my side project, something that grew with me as I became a more experienced designer and instructor. It took several years of hard work and dedication for things to really take off, from when I first started the YouTube channel and [began] recording and selling online courses. An important milestone for both me and the company was when YouTube featured a recording of a seminar I had given and the response was overwhelmingly positive. That video gained more than a million views in four



Yes I'm A Designer launched its interactive graphic design magazine at the beginning of this year

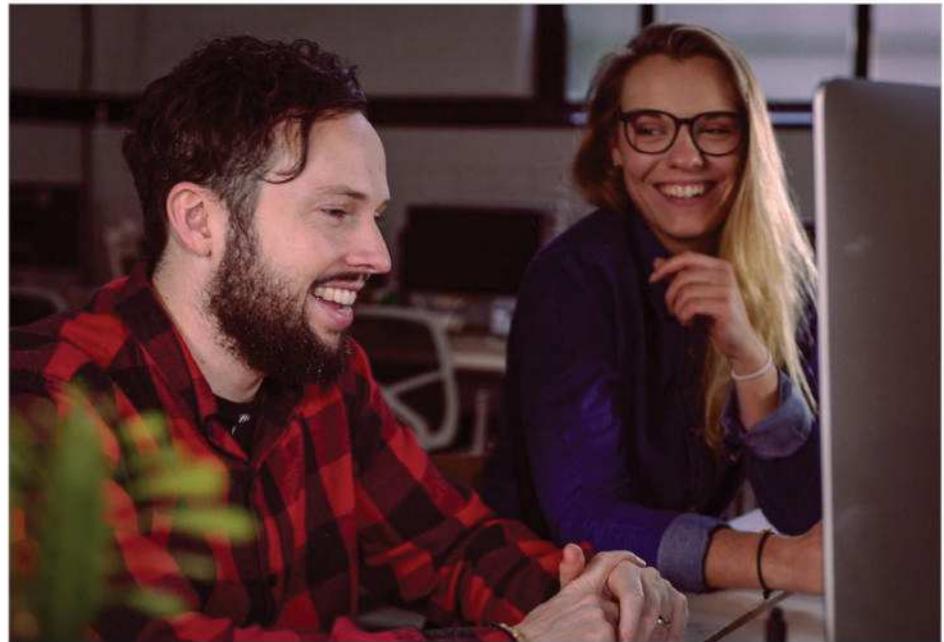


Photo: C Sheng (<https://www.stormthecastle.co>)

365: A new video tutorial every day for a year is the centrepiece of 365 Days of Creativity

months and is still going strong. That's when I decided to make YES my main focus. It was always what I was really passionate about.

What's the story behind the name?

SP: I remember Martin telling me two things he wanted from the name. Firstly, it had to be immediately obvious what the brand was about. Secondly, it should be positive, something that makes people smile. I think the name nails both of these. Although there was a third factor: the domain needed to be available! In the end that was actually the clincher. Also I think the name nicely captures the aspect of mastering design skills. It's something we imagine our clients saying – with a fist pump – after studying our courses and landing their first job as designers.

You have a great-looking responsive site. Did you build it yourselves?

MP: We actually recently updated its whole look and feel to reflect the growth of the company. The site is hosted on WordPress using The7 theme and loads of cool plugins. It is perfect for our team because we all work on different aspects of the site, building new posts and pages and it makes it easy to log in and make changes quickly.

It's great because we can really customise the site to suit the brand and use countless great plugins without overcomplicating the back-end.

Your 365 Days of Creativity project sounds insanely ambitious. What exactly is it all about?

SP: It's a big undertaking for sure! We wanted to find a way to help people learn and feel inspired by something new every day. Time is a massive limiting factor though, as not everyone has the chance to sit and watch a 10- to 15-minute tutorial each day. So we wanted to summarise a design skill or technique in just one minute. We have been tweaking the format and keep exploring new ways to improve the videos we will be producing for the rest of the year. Consider it a public experiment to find the best short tutorial format for learning visual skills. Producing 365 tutorials in a year will definitely give us an edge in this area. We have a playlist of all of them so far on our YouTube channel.

You run a monthly creative challenge; tell us a bit about that

EM: This idea came up quite a while ago when we were out having lunch. It goes hand in hand with our 365 Days of

The homepage features a large teal header with the 'yes I'M A DESIGNER' logo and navigation links for 'ONLINE COURSES', 'MEMBERSHIPS', 'TUTORIALS', 'RESOURCES', 'BLOG', '365+', and 'ABOUT'. Below the header is a prominent '365 DAYS OF creativity' graphic. Underneath are four main sections: 'ONLINE COURSES' (illustrated with a laptop launching a rocket), 'FREE TUTORIALS' (illustrated with a computer monitor displaying a design interface), 'CREATIVE BLOG' (illustrated with a person working at a desk with a lightbulb idea), and 'Learn daily', 'Challenge yourself', 'Collaborate', and 'Be inspired' buttons.

The company's responsive site was built on WordPress with the The7 theme and plenty of plugins

Creativity videos. Like Martin mentioned, the whole idea behind 365 was to inspire people to create new work. So it seemed like a great idea to actually set a monthly brief people could get their teeth into. I tend to check out all the one-minute tutorials that have been posted on YouTube that month, think about which skills would work well together, then come up with a kind of mini brief that we then discuss as a team. Again, we want to encourage people to create, keep learning and share their work with others. That's why we decided to use the Community feature on Google+.

You produce a monthly graphic design magazine. What sort of things are in it?

SP: We launched our magazine at the beginning of this year and it's something I love working on! Again it was an idea that came about as a result of our 365 Days of Creativity project. It's an interactive document so we are able to provide links to extended tutorials that are not available on our main channel, which makes it much more than just a monthly round-up. Additionally we feature articles on other designers and design topics. In the future, we also have plans to feature more inspirational content, discuss different

design topics and even share some of our own personal designs.

You're based in Bournemouth. What's its creative scene like?

EM: I heard at a local networking event that Bournemouth has the fastest-growing creative community in the country. I can't say for sure if that's true but it definitely is thriving. Even since I graduated last year new agencies, events, workspaces and opportunities are cropping up everywhere. It's great because you can get to know other creatives in the area fairly easily and they usually end up introducing you to even more people. It really does feel like a community and, as a team, we are really happy to be a part of it and want to be involved and help it grow further!

Do you think there's a need for web designers and developers to have a better understanding of graphic design?

SP: Especially in creative teams, it's important that we all have some understanding of jobs that are closely related to or overlap with our own. It makes for a better workflow, team environment and saves a ton of time. Plus we can learn from each other: seeing how others work may change how we do things. ►



EMILY MELLING
DIGITAL MEDIA MANAGER

What would we find on your desktop today?

My MacBook, Urbanear headphones, trusty notebook, Creative Review and obviously a coffee!

What do you have on the walls?

We share a co-working space so they tend to handle what goes onto the walls and they do a great job!

What will you do for lunch?

100% Bosconova, it's a small but brilliant cafe. We have been going as a team since I started and we all have our go-to lunches there.

What hours do you work?

We tend to work from around 9 and finish off for about 6, but our working day is pretty flexible if needs be.

What else do you do in the office?

We chat a lot about movies, designers we love, future plans (and avocado on toast).

How often do you all hang out?

We usually go out for a team lunch once or twice a week and also like to catch a film or go for a walk all together with our other creative friends quite often!

Describe your office culture in three words

Collaborative, inquisitive, humourous.



*TIMELINE

Key dates for
Yes I'm A Designer

MAY 2007

Martin passes his first Adobe Certified expert exams and starts teaching in Hungary.

JULY 2010

Martin starts working at an Adobe training centre as an instructor and graphic designer and meets Shumi.

AUGUST 2010

Martin buys the domain 'yesimadesigner.com' and starts a creative blog with the help and encouragement of Shumi.

JANUARY 2011

Martin's first video tutorials are released on the Tuts+ network (he produces over 200 of them in the next couple of years).

JULY 2012

Yes I'm a Designer Limited becomes a registered company in the UK. Shumi starts helping out with online course production and design projects.

AUGUST 2012

First online courses released on Udemy and on yesimadesigner.com. Martin spends the next five years producing 200+ hours of online training and delivering in-classroom training for big international clients.

JUNE 2017

YouTube video *Learn to Draw Anything with Adobe Illustrator CC* goes viral and channel doubles in size in two months.

SEPTEMBER 2017

Emily joins YES as digital media manager and Shumi becomes creative director.

OCTOBER 2017

The concept of 365 Days of Creativity is born and work begins on the first two months' tutorials.

FEBRUARY 2018

Best-seller course 'Illustrator MasterClass CC 2018' is published in China with Mandarin subtitles.



Photo: C Sheng (<https://www.stormthecastle.co>)

Besides growing its online presence, the company is now looking into holding events and setting up places creatives can meet, network and learn

► How do you stay motivated?

EM: Lots of coffee. No I'm kidding, not just that. I think working in a team of people you can constantly discuss ideas with and learn from means I always feel motivated, both professionally and personally. I also really enjoy reading creative magazines. I have a subscription to *Creative Review* and *Stack*; it's nice to make a real thing of going out for coffee and sitting with a magazine. I think all three of us actually have a go-to creative resource that we are addicted to! Martin starts every day browsing Behance, while Shumi finds a lot of inspiration on Pinterest and online creative markets like Etsy.

Do you have any plans to branch out into web-design courses and tutorials?

MP: It's definitely an area I would really like to get into in the future. When creating courses it's really important to first have expertise on the topic and secondly to know exactly who your audience is and what they will get out of the course. I have always wanted to collaborate with top creatives from different fields to produce new types of courses. I can imagine web design being one of them and I know the best person to collaborate with, who is a long-time friend and also a former colleague.

What other projects are you planning to work on?

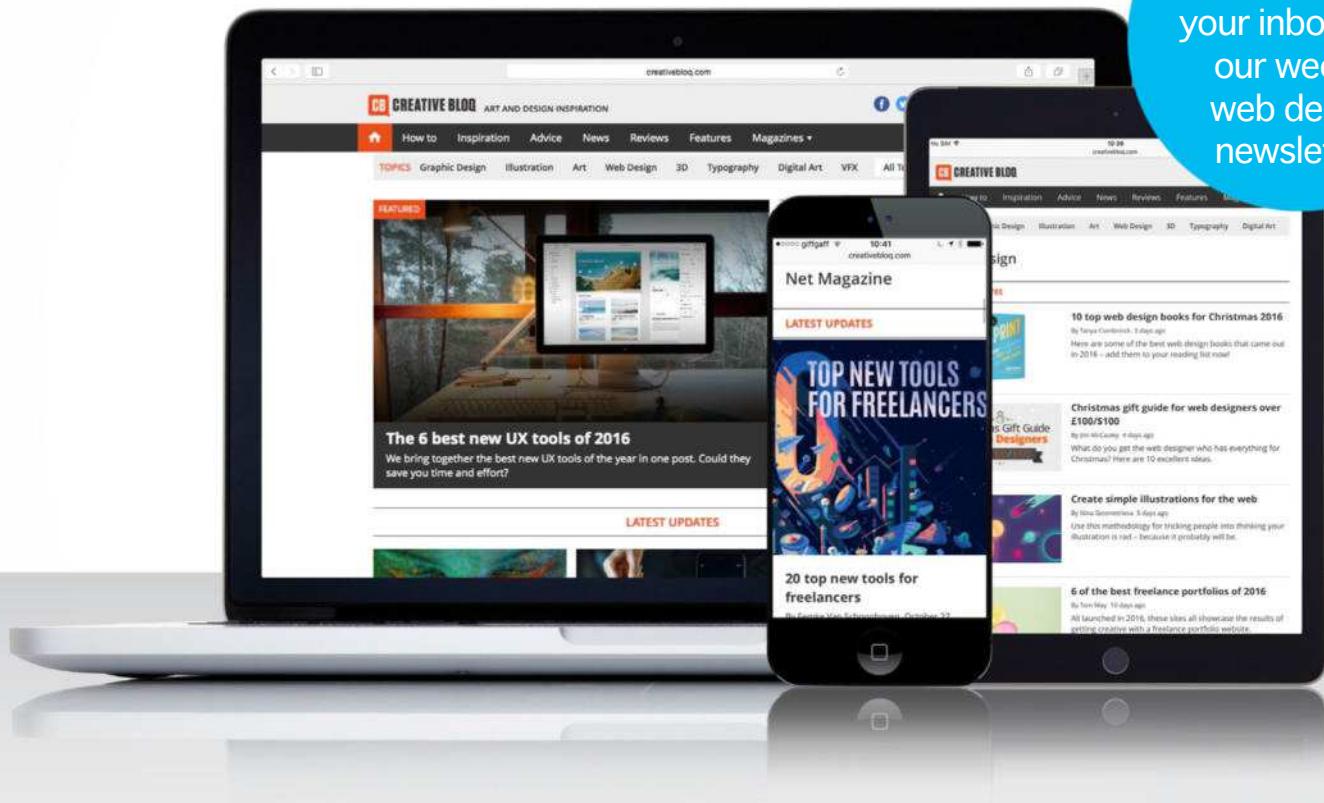
SP: This quarter we want to focus on releasing new courses on the site to teach specific skills/techniques we haven't covered yet. We are also very excited to be planning our first ever online boot camp, as this format of teaching is unlike anything else online. It runs over a few weeks and you are set tasks to complete, have projects, deadlines and designated instructors to give live feedback. It really takes the online learning experience to a whole new level.

Can you tell us what the future holds for Yes I'm A Designer?

MP: The company has grown so much over the last six to eight months. What's great is that we are always being approached by companies with new opportunities and ideas. As well as our own plans for new courses, partnerships with other teachers, exploring new mobile software and live teaching, we are often presented with chances to work with other companies, which is hugely exciting. Besides growing our online presence we also want to start holding more events and places creatives can meet, network and learn. The whole idea is for people to be able to design their dream career. ■

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★ HOW WE BUILT

THE STATE OF EUROPEAN TECH

The team from Studio Lovelock reveal how they turned a heavyweight annual report into an interactive data-viz treasure trove

The collage includes six numbered callouts:

- 1** The landing page features a large, stylized '2017' graphic and the title 'THE STATE OF EUROPEAN TECH'.
- 2** A chart titled 'Capital Flows' showing total capital invested into European tech from 2012 to 2017.
- 3** A section titled 'EVOLVING EUROPE' with a list of five bullet points under the heading 'THE RESEARCH'.
- 4** A bar chart showing the percentage of respondents who are more or less optimistic about the future of European tech.
- 5** An article titled 'Europe has a strong sense of optimism about the future of its tech ecosystem' with a sub-question 'Are you more or less optimistic about the future of European tech today than you were 12 months ago?'.
- 6** A section titled 'INTERACTIVE' showing a graph where users can switch between multiple datasets.

CLOSE UP

BRIEF

For the 2017 edition of its State of European Tech report, Atomico wanted an online version presenting the data in a format that users could explore and manipulate in a more meaningful way than the usual traditional report structure would permit.

(1) A striking landing page to make a strong first impression. It distinguishes the site from other reports and sets the tone from the outset as authoritative and technically precise. **(2)** It was a real challenge given the density of the report to get it to work effectively on mobile but absolutely critical. Mobile traffic has accounted for nearly 70% of traffic so far. **(3)** A simple and consistent navigation system was really key to make a lot of content easily accessible whether

the user is after an overview or the full detail. **(4)** All the graphs can be downloaded as standalone graphics, enabling users to easily incorporate the data into their own presentations. **(5)** Each article can be saved, enabling users to easily create their own bespoke reports that can then be downloaded as PDFs. **(6)** Within the articles the graphs are interactive. Users can switch between multiple datasets as well as rollover for more detail.

JOE LOVELOCK



Joe is creative director at Studio Lovelock and was responsible for the site's UX and visual design
w: studiolovelock.com

MIKE ALLANSON



Mike is a freelance developer able to build sites and the servers they live on from top to bottom
w: madebycomrades.com

MATT COLLINS



Matt is a web developer and technical lead who has amassed years of experience
w: mcollins.co.uk

For the past three years Atomico (atomico.com) has compiled The State of European Tech (stateofeuropeantech.com), an annual report that shines a light on what's happening in Europe's burgeoning tech ecosystem. For the latest and most comprehensive edition, surveying over 3,500 people and teaming up with data partners including LinkedIn, Stack Overflow and The London Stock Exchange, Atomico decided that it wanted to give its readers a way to properly explore the data other than a traditional annual report format. Enter the team at Studio Lovelock (www.studiolovelock.com).

How is this year's report different to previous years?

JL: Beyond being the biggest and deepest look into Europe's tech scene yet, this is also the first time the report has been primarily presented online. You can still download a full PDF of the report from the site but the best way to view and interact with the data is via the website. Users can manipulate charts and graphs, refine results and download custom-made charts and reports. Accompanying the hard data are insights and thoughts from data partners and interviewees to support and share insight on key findings, which helps bring a human element to the information.

What was the brief?

JL: The brief was to adapt the standard annual report and bring it online with the aim of providing flexible data for

the users to manipulate and explore in a deeper way than is possible [with] a PDF or physical report. We were also tasked with making the data visually appealing whilst also not getting in the way of the report's main purpose, which is showing clear data.

How did Studio Lovelock become involved in the project?

JL: A mutual friend of ours invited us to submit a proposal based on the aforementioned brief from Atomico. Within our proposal we tried to articulate our eagerness and our ideas around the possibilities of the project. I believe our ideas around project potential are what got us in the door and then once we were in, our eagerness and excitement maybe sealed the job.

Tell us a bit about your UX process

JL: The report is written in a linear narrative form with a beginning and an end. We wanted to retain that structure whilst still enabling the user to engage at different levels depending on whether they were after a general overview of the findings, interested only in certain sections or wanted to read the full report.

Given the quantity of data there needed to be a simple structure that the user could grasp quickly and consequently move around the report without too much effort, whether that be browsing or seeking out specific information. Also from a content creation perspective, we wanted to be able to give clear instructions as to what [it was] we needed from Atomico.



*TIMELINE

How Studio Lovelock approached the project

AUGUST 2017

An initial meeting to explain our approach and convince Atomico we can bring something special to the project.

AUGUST 2017

A workshop to explore the brief in depth and ensure we understand what the client wants to achieve with the project.

AUGUST 2017

Explore how we can translate the values into a visual aesthetic and manage to bring the content to life in a clear and engaging manner.

SEPTEMBER 2017

Define key user journeys and how we structure the content in a logical and intuitive way across all devices.

SEPTEMBER 2017

Deconstruct the content and data requirements and translate into a flexible system so the client can populate the site efficiently.

OCTOBER 2017

A loop of populating the site with real content and tweaking both the CMS and frontend to accommodate edge cases and polish the design.

NOVEMBER 2017

A coordinated effort from the team to get 60+ articles containing over 250 graphs up onto the site.

NOVEMBER 2017

Thorough bug testing and final design polish in time for a co-ordinated press launch across the European business media and on stage at Slush 2017.

DECEMBER 2017

Tracking the data to get an insight into who is using the site and in what way.

SHOWCASE

How we built



★ EVOLUTION

(1) Very early sketch designs for the mob version of the site, as we started to play around with how we were going to organise the content. (2) Evolved wireframes including dummy content and a top-level design pass that we can build a initial prototype from in Flinto. (3)

Very early design doodles looking at different type combinations and possible colour palettes. (4) As the report was fairly dense, we were keen to explore options for illustration that could bring visual interest to the site. Early tests playing around with data references. (5) An alternate route we explored with an emphasis on clean editorial type design references combined with brighter, slightly more playful illustrations. (6) Early iterations of the preferred design direction. I think they're striking but the black gives them a bit too much of a military computer game reference. (7) Final design polish before handing over to our dev team. We replaced the black with a more welcoming royal blue and introduced more white for the article backgrounds.

► **Can you talk us through the site's main design features?**

JL: We were eager to create a distinctive aesthetic that felt authoritative and precise but also enticing and – for want of a better word – cool. That had to be balanced with the fact that there was a huge amount of information that needed to be presented clearly.

This all translated into a striking blue as the lead colour coupled with data type illustrations that allude to precise measurement and contours and, where space permitted, bolder use of type as an image to give it a more distinct and designed feel. Finally we added little bits of background animation on the overview pages and transitions just to subtly elevate the overall sense of quality as you move through.

How can users interact with the data?

MA: To help with picking through the data in the report, users can filter content based on topics they're interested in or save their favourite articles. Both filtered and saved content can be downloaded as a customised PDF. Many of the charts have multiple datasets, with a drop-down menu to switch between them and dedicated download buttons.

Talk us through some of the technologies running the site

MC: The site consists of two parts – a headless CMS on the backend and a static HTML site for the frontend. The backend is built in Python with Django, Wagtail CMS and Django REST Framework. The frontend uses React and Gatsby, pulling in the CMS data to create a standalone HTML site. The charts are created with Highcharts, as well as some shared JS to build chart previews in the CMS and the full charts on the frontend. Finally there is an AWS Lambda function to create customised PDFs on demand via the frontend.

What did your testing process involve?

Did it bring up any major issues?

MA: Testing took place throughout the project, starting with prototyping key interactions. During the build we



Font choice The type is really key to the design. The bulk of the content is in Work Sans, a clean sans serif from Google's web fonts. This is complemented with Komu A and Space Mono to add a personality



Information download A PDF version of every article can be downloaded either as part of the full report or as a custom version via the save or filtering functionality

wrote unit tests to ensure important functionality worked as expected, along with snapshot tests to catch unexpected changes on the frontend. From fairly early on we had an auto-updating development site that made ad-hoc user testing possible throughout the project. All of these steps turned up their own issues: the user testing in particular made a big positive impact on how the site functions.

What sort of response has the site had?

JL: The overall response has been hugely positive, which we're obviously thrilled

about. From a client perspective the top-level goal was to really establish the credibility and reputation of this report and, by association, Atomico. The media appetite, the site traffic (over 80k visitors in the first two months) and the general feedback they've received all point towards this site having done that. What's perhaps more exciting is that all that attention does subtly start to shift the way people feel about European tech. That's down to the quality of the report Atomico has created and the coverage it's received but I like to think the design and build has played a key part too. ■

FEATURES

25 JavaScript tools



AUTHOR

MATT CROUCH

Matt is a front-end developer from London working with Vidsy in order to help bring creatives and brands together. He specialises in React projects with a focus on performance and accessibility.

w: mattcrouch.net
t: @mattcrouchuk



ILLUSTRATOR

HARRIET KNIGHT

- Front-end developer Matt Crouch details a mixed set of tools that will ease the creation of your next JavaScript project

```

ts class.ts
1 function logger(target : any, name : String) {
2   console.log(`name evaluated`);
3 }
4
5 class Greeter {
6   greeting: string;
7
8   constructor(message: string) {
9     this.greeting = message;
10  }
11
12 @logger
13 greet() {
14   return `Hello, ${this.greeting}`;
15 }
16 }

js class.js
1 var __decorate = (this && this._decorate) || function (c, r, i, a) {
2   var o = arguments.length, n = c < 3 ? r : de
3   if (typeof Reflect === "object" && typeof Reflect
4     else for (var i = decorators.length - 1; i >= 0;
5       return c > 3 && r && Object.defineProperty(target
6     );
7   function logger(target, name) {
8     console.log(name + " evaluated");
9   }
10 var Greeter = /** @class */ (function () {
11   function Greeter(message) {
12     this.greeting = message;
13   }
14   Greeter.prototype.greet = function () {
15     return "Hello, " + this.greeting;
16   };
17   __decorate([
18     logger
19   ], Greeter.prototype, "greet", null);
20 })();
21 }
22

```

Above When it compiles, TypeScript can target any version of JavaScript required for each project

CODE QUALITY

TypeScript

typescriptlang.org



A common issue for new JavaScript developers is its dynamic typing system. A variable type can be inferred at runtime but will have no restriction as to what type it can be in the future.

Dynamic typing can be useful in creating patterns, but how useful that is depends on the project. TypeScript aims to bring a declarative style of programming by typing variables where developers feel it makes sense.

```

<pre>
interface Person {
  firstName: string;
  lastName: string;
}

function greeter(person: Person):string {
  return `Hello ${person.firstName} ${person.lastName}`;
}
</pre>

```

Type annotations appear where a variable is defined. With objects, interfaces define the structure of an object and the type becomes a reference to that interface. These can be extended to create easily customised objects.

```

<pre>
function logger(target: any, name: String) {
  console.log(`name evaluated`);
}

class Greeter {
  @logger
  greet() {
    return `Hello, ${this.greeting}`;
  }
}
</pre>

```

TypeScript uses experimental JavaScript syntax as part of its system. Decorators, for example, are functions that apply themselves to a class, method or property that provide repeatable functionality. These can save duplication in a project.

It also compiles existing syntax such as classes, modules and arrow functions into valid ES3 or ES5. This can be customised to the browsers targeted within each project. When browsers can natively support these features, TypeScript can be instructed to keep them, making the resulting code perform better.

TypeScript is a superset of JavaScript, so provides benefits to the language without changing its structure. As a result, any JavaScript is valid TypeScript and any of its features used are completely optional.

ESLint

eslint.org



Linting is a type of static code analysis that can be performed on a project to check for any script that is likely to break or does not match the preferred style for the project. ESLint can check JavaScript for common mistakes, in addition to following popular pre-defined sets of rules from companies such as Google and Airbnb.

Prettier

prettier.io



Much like ESLint, Prettier is able to identify formatting quirks. It also goes one step further and will automatically update the offending lines on the developer's behalf. While it is not as customisable, Prettier is more aware of surrounding contexts and will only apply formatting where it makes sense. It can also support other formats like JSX.

Travis CI

travis-ci.org



Travis CI is a continuous integration (CI) tool. It monitors GitHub branches for any new commits and will run tests against it to make sure nothing was broken in the process. It can then deploy the change or notify the team about any issues. Travis CI is free for use with open-source projects, where consistency is important.

JSDoc

usejsdoc.org



When writing complex modules, it can be a difficult task to remember how everything works. With JSDoc, methods can have special code that describes what they do, any parameters they expect and the sort of thing they can return. This can then be processed to create documentation or enable editors like VS Code to provide hints in context to developers.

FEATURES

25 JavaScript tools



FRAMEWORKS

Chat Application

Sonia Hunter Yeah sounds good!

Karl Murphy 🍏

Christina Myers I liked your last article

Charlie Jones Net Mag is the best!

Zoe Sims 🎉

Javier Little 🚗

Brandy Harper haha

Same Gutierrez

Error icon created by Adnen Kadri from The Noun Project - User photos from randomuser.me

React Sight

Hover over nodes to see State and Props

State
None

Props

Object

src: <https://randomuser.me/api/portraits/women/1.jpg>

Above React Sight is a Chrome plugin that visualises component hierarchy alongside state and props

React

reactjs.org

06 Created by Facebook, React is one of the most popular JavaScript frameworks out there at the moment. It is primarily built to provide the user interface of an application.

It is constructed on the concept of components – individual blocks of content that tell React how to render each part of an application. When something changes, React will work out what needs to update on the page. Virtually all of the logic that deals with how the application behaves is dealt with inside a component, which makes them easily reusable and they can often be shared across projects.

```
<pre>
class App extends React.Component {
  render() {
    return (

```

```
<div className="App">
  <Magazine title="Net Mag" />
</div>
)
}
}</pre>
```

While not essential, a lot of React projects are written in JSX. It is a language that looks and functions in a similar way to HTML but enables components to easily work alongside each other.

Each component has a special ‘render’ method that tells React what to display. Internal state or external values called ‘props’ hold information about what the render should ultimately look like, whether that comprises text or other child components.

React employs a unidirectional data flow, meaning that data is stored in a parent and passed down into its children.

If a child needs to update that data, specially crafted methods can be passed down for the child to call.

React Router is a popular package that supplies special components to React for internal navigation. Depending on the URL supplied, React Router can serve specific components to different parts of an application.

Redux is commonly paired with React to manage application-wide state. Through special bindings, React is able to communicate with a large object that stores all the data for the application. Select parts of this state can then be passed to components to dictate how it should display.

Overall, React is a relatively lightweight framework that is versatile enough for a lot of different projects. While not as fully featured as Angular, it is possible to piece together all the parts for each project as required.

Angular

angular.io

07

Angular was one of the first popular single-page application frameworks available. It has changed dramatically since its first release and with a host of new features still remains prevalent today.

Angular is designed to cover all aspects of an application – from templating to dependency injection. It has an opinionated structure, which means all projects will end up working in a similar way.

Unlike React, Angular uses two-way data binding to keep all aspects up to date. Values in an input text box, for example, can directly update the model. Likewise, if the model changes display will automatically update. This keeps everything in sync.

Angular is built on top of TypeScript, which enables it to use features like static typing and decorators to make the composition of components easier to manage. TypeScript then compiles down to regular JavaScript to use as normal in the browser.

Polymer

polymer-project.org

08

Polymer is a framework from Google created to help build applications using web components. By working with the official specification, these components are reusable and can work alongside native elements and methods. Polymer 3 is coming soon and switches to using npm and ES2015 module imports as the needs of developers have evolved.

Vue

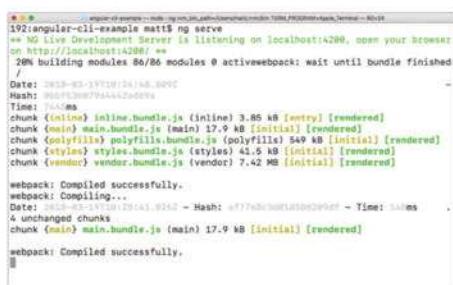
vuejs.org

10

Vue is a new framework but one that has quickly gained traction. While it shares similarities with others, it also eases some of the common pain points. It's flexible enough to be used either as part of an existing application, or as the main framework for a site.

All of the HTML, CSS and JavaScript for a component can live within the same file. Styles are scoped, which makes it easier to drop components into multiple projects as needed. Vue also contains its own state management library called Vuex. Similar to systems like Redux, the application has access to a centralised data store. Adjustments are performed by mutations on that state, which trigger updates in any component making use of that data.

Similarly, Vue also includes a router to enable navigation between different parts of a single-page application. By defining all the routes available, Vue will take care of the navigation between them.



```
192 angular-cli-example matthieu$ ng serve
** NG Live Development Server is listening on localhost:4200, open your browser
on http://localhost:4200/ **

20% building modules 86/86 modules 0 activewebpack: wait until bundle finished:
/
Date: 2015-03-19T10:14:16.849Z
Hash: 7445b...
chunk {main} inline.bundle.js {initial} 3.86 kB [entry] {rendered}
chunk {polyfills} polyfills.bundle.js {initial} 17.9 kB [initial] {rendered}
chunk {styles} styles.bundle.js {styles} 54.9 kB [initial] {rendered}
chunk {vendor} vendor.bundle.js {vendor} 45.5 kB [initial] {rendered}

webpack: Compiled successfully.
webpack: Compiling...
Date: 2015-03-19T10:15:03.916Z - Hash: af77e6b9d1010c94c6c - Time: 34ms
4 unchanged chunks
chunk {main} main.bundle.js {main} 17.9 kB [initial] {rendered}
webpack: Compiled successfully.

```

Above The Angular CLI is a great way to try out new things with the framework

CASE STUDY AIRBNB



In early 2015, Airbnb was reaching the limits of its existing server-rendered approach. It was using a combination of Backbone and Handlebars to generate availability calendars alongside other complex pages key to its business.

To combat this, its team turned to React as a framework to help them move forward. As React by itself is just a view layer, they were able to update small sections of the site at a time. With no backend requirement, they were able to connect with their existing Rails structure to feed the data needed for each view from their API.

The search page has seen a recent conversion from the now-defunct Flight framework. As React and Flight both share a similar component structure, it was simple to refactor each part individually. They were able to use higher-order components to wrap each section and convert old Flight instructions to new React props.

To aid this transition, Airbnb authored several open-source tools to help with different aspects of development. Enzyme, for example, was created to make testing easier. Details can be found on GitHub (github.com/airbnb?language=javascript).

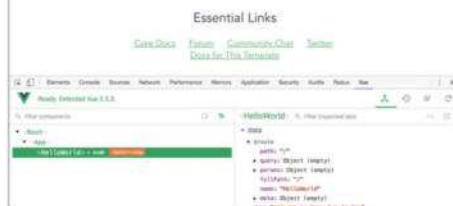
Svelte

svelte.technology

09

Svelte is designed to be a lightweight framework that disappears into standardised JavaScript once the project is built. Component logic, style and markup all live within a single file and work much like web components with scoped styles and <slot> elements to add content. The feature set is intentionally limited but can be readily extended as needed.

Welcome to Your Vue.js App



Above DevTools enable access to the inner workings of each component, including internal state and Vuex



Components are loaded in dynamically as needed, which speeds up the initial page load



Airbnb provides a React style guide to make sure projects are clear and stay maintainable

Mochamochajs.org

11

Mocha is often the go-to for developers to write a range of tests in a project because it is simple to get started.

Each test can run through Node or in the browser, making it easy to see where issues are occurring. Mocha also works with any assertion library, which makes it highly customisable to suit the needs of different teams.

Puppeteergithub.com/GoogleChrome/puppeteer

12

Puppeteer provides a way to control Chrome with Node, which makes repeatable UI tests a lot easier to perform.

It can check visual elements in the browser, such as the page title, as well as create screenshots to help track any regressions. Test runners like Jest or Mocha can run Puppeteer and can fail tests based on its results.

Protractorprotractortest.org

13

Protractor is a specialised testing tool for all versions of Angular. It uses Selenium to run end-to-end tests in real-world environments and browsers.

Protractor will do all the set up required and can automatically wait for the page to load, which helps avoid brittle tests and decreases the amount that subsequently needs to be written.

Nightwatchnightwatchjs.org

14

For other projects that need end-to-end testing, Nightwatch makes a fantastic alternative. It also runs Selenium under the hood, which will enable you to test what the end user will see. Tests are written as modules that are run through Node and it is an easy procedure for them to be extended to connect to CI platforms or to send their results to external software.

PROJECT TESTING

```
JS Countdown.test.js ×

36     it('displays hours and seconds', () => {
37       const wrapper = shallow(<Countdown time={twoMinutes} />);
38
39       // Make sure the correct times display as expected
40       expect(wrapper.find('.countdown__mins .countdown__value').text()).toEqual("2");
41       expect(wrapper.find('.countdown__secs .countdown__value').text()).toEqual("0");
42     });
43   });

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL 2:bash + - ×
```

Test Suites: 4 passed, 4 total
Tests: 18 passed, 18 total
Snapshots: 1 passed, 1 total
Time: 1.339s, estimated 2s
Ran all test suites.

File	%Stmts	%Branch	%Funcs	%Lines	Uncovered Line #s
All files	79.59	75	92.31	88.64	
src	16.67	0	50	28.57	
App.js	100	100	100	100	
index.js	0	0	0	0	1,2,3,4,6
setupTests.js	100	100	100	100	
src/Button	100	100	100	100	
index.js	100	100	100	100	
src/Countdown	100	87.5	100	100	
index.js	100	87.5	100	100	
src/CountdownTimer	100	100	100	100	38,60
index.js	100	100	100	100	

matts-mbp:jest-test matts\$

Above Jest can generate code coverage reports to help identify any gaps in test suites

Jestfacebook.github.io/jest

15

Jest is a test runner created by Facebook. Its main aim is to be as easy to set up and use as possible, with no configuration required to get started. Any files inside a “`__tests__`” directory or ending in “`.spec.js`” or “`.test.js`” will be picked up automatically.

Tests run quickly and can run on each change to make sure that everything works correctly. Jest can even pick up what has been updated since the last commit and will only run tests on elements that have been affected. Customisable command line options make sure the right tests are running at the right time, which is ideal for keeping continuous integration tools fast.

One standout feature of Jest is snapshot tests. While not testing a specific value, Jest will capture the structure of what is under test and will compare against that in future tests. If anything has changed, Jest will highlight the change and it can either be fixed or confirmed as intentional. This works great for React components but can also be used for any kind of serialised value.

JSDOM is configured by default, which makes testing browser-based projects easier by enabling them to run through Node. Jest also comes with basic test functionality that includes mocks, spies and assertions. While these will work, other tools such as Enzyme and Sinon can be brought in to make writing tests an easier process.

While Jest is often used to test React applications, in actuality it can be used to test a project that was written for any framework or language. Premade setup files can take the hassle out of building the right testing environment, for example making sure that Angular is defined globally.

The Jest Object

The `Jest` object is automatically in scope within every test file. The methods in this section create mocks and let you control Jest's overall behavior.

Methods

- `jest.clearAllMocks()`
- `jest.disableAutomock()`
- `jest.enableAutomock()`
- `jest.fnImplementation(fn)`
- `jest.isMockFunction(fn)`
- `jest.getMockFromModule(moduleName)`
- `jest.mock(moduleName, factory, options)`
- `jest.unmock(moduleName)`

Above The Jest object provides plenty of useful behaviours, such as mocks and fake timers

EDITOR PLUGINS

Quokka

quokkajs.com

16

Despite our best efforts, no developer can get everything right first time. When a small idea needs trying out, setting up a project just to see if it works can be overkill. When working with unfamiliar tools and libraries it is best to have an isolated workspace that shows exactly what is happening at each step.

Quokka is an environment that lives inside an editor. It evaluates code inline and displays the result as it gets used. This makes it great for trying out blocks of logic without having to build a new bundle and check it in the browser.

Coloured blocks alongside each line number shows that it's covered by Quokka. A green block indicates there are no problems, while red alerts that there is an issue with that line. The comment at the end of that line provides more information. A grey box shows a line is never reached, which may or may not be an intentional decision.

While Quokka works with most setups straight away, its settings can be customised within each file or inside package.json if used with npm. Most languages based on JavaScript are already



The screenshot shows a code editor window titled "JS Untitled-1" containing the following JavaScript code:

```

1 function isSquareNumber(x) {
2     if (isNaN(parseFloat(x)) || !isFinite(x)) {
3         throw new Error("Value is not a number"); Value is not a number
4     }
5     return Math.sqrt(x) % 1 === 0;
6 }
7
8 console.log(isSquareNumber(1)); true
9 console.log(isSquareNumber(2)); false
10 console.log(isSquareNumber(3)); false
11 console.log(isSquareNumber(4)); true
12 console.log(isSquareNumber("4")); true
13 console.log(isSquareNumber(4.5)); false
14 console.log(isSquareNumber("Infinity")); Value is not a number
15 console.log(isSquareNumber(() => {}));

```

Below the code editor, the terminal window shows the output of the evaluated code:

```

Value is not a number
at isSquareNumber quokka.js:3:4
at Object.<anonymous> quokka.js:14:0

true at isSquareNumber(1) quokka.js:8:0

```

Above Quokka will output the contents of the file to a window connected to the editor

supported, including JSX and TypeScript, but plugins are also available to work with other syntaxes such as jQuery without having to explicitly import it. Plugins can be brought in to set up and tear down environments each time the code runs.

The project is made by the same team as wallaby.js, which features similar functionality but for test suites. As a

failing test gets written, Wallaby will highlight the issue straight away, which means errors are caught sooner.

Quokka is available as a plugin for VS Code, Atom or JetBrains IDEs. The free Community edition will cover most cases, but the optional Pro edition enhances things further by enabling inline inspection of code to identify slow performance issues.

Emmet

emmet.io

17

Emmet is a set of plugins available for most code editors that aims to enable developers to code quickly by removing all of the slow, repetitive tasks involved. When developers enter a small keyword, it can detect and replace it with a larger block of content. Emmet will also understand their intentions, parse the syntax and even expand the code automatically.

Import Cost

github.com/wix/import-cost

18

Over time, applications can soon become bloated with large dependencies weighing them down. Import Cost is a simple plugin for VS Code that will highlight the size of any imports inline as they are added and are colour-coded to see at a glance what might be over-inflating the bundle. The developer can then decide whether that extra weight is justified or not.

BracketHighlighter

facelessuser.github.io/BracketHighlighter

19

Code can often get buried inside nested objects, functions or elements. Sometimes that can make it hard to see exactly which open bracket matches up to which close bracket. BracketHighlighter for Sublime Text will highlight one bracket when the other is selected and will even work with multiple selections and inside strings.

Chrome Debugger

github.com/Microsoft/vscode-chrome-debug

20

VS Code can create breakpoints and provide feedback on running Node applications already but what about the browser? The Chrome Debugger plugin will hook the editor up to a DevTools instance to enable the same behaviour in-browser. Step through code, pause execution and monitor variable values in a familiar environment.

FEATURES

25 JavaScript tools



INTERFACES

D3

d3js.org



Data visualisations are a great way to make large datasets more interesting. By approaching the information from a new angle, the data is easier to understand and new insights can be made. Making them can be easier said than done, though, and working with SVG directly comes with its own quirks, while trying to output to a <canvas> element can be slow and inaccessible.

D3 stands for ‘Data Driven Documents’ and is designed to create data visualisations with JavaScript using SVG, HTML and CSS. These documents are designed to be easily updated as the user interacts with them or new data arrives.

At its core, D3 binds data to DOM elements, which can be interpreted in different ways depending on the project.

For example, a bar chart could be created with a few <div> elements that are styled to look like bars. Each data value would be bound to a bar, which in this case would be widened based on its value.

By keeping a reference to the selected element, the charts can be updated as necessary. The “enter” and “exit” methods define what should happen when an element is to be added or



Above The Gallery shows the diverse range of graphics that can be made with D3 (github.com/d3/d3/wiki/Gallery)

removed from a chart based on the data. With that in place, charts can be reparsed and updated automatically.

Where D3 really shines is through complex visualisations, such as maps. This is achieved through manipulation of SVGs. While there is no built-in functionality for creating a map, it is possible for D3 to plot GeoJSON data using d3.geo.path.

There are plenty of other tools and libraries built using D3 that are designed to make the process easier. DataMaps provides ready-made map data on set projections that can be dropped in and customised as needed.

As D3 will be in charge of the DOM, it can be difficult to integrate with modern web frameworks that update based on state. Libraries such as React-D3 are made to work with updating props and can take the hassle out of integration.



Clear API. Use declarative API to map seamlessly dataset columns to visual properties



Facets. Explore data patterns across different segments in one chart



Plugins. Get trendline, annotations, layers and export to PNG out of the box.
Have some sophisticated needs? Write your own plugin!

Above Taucharts uses D3 to generate charts that are simple to create and easy to understand

Anime.js

animejs.com

22

More sites are embracing subtle animations. A small animation is a great way to catch the user's eye and create interest. CSS animations are ideal for simple transitions that are known ahead of time but what if the targets and values change based on user input?

Anime.js is a tool that makes animations easier to work with.

Everything starts with a call to 'anime' which defines everything about the animation including the target, duration and any transitions to apply. Targets can be anything from a DOM node to a JavaScript object, which can transition values inside of itself.

One great feature of Anime.js is the ability to create a path for an element to follow based on a <path> element defined in SVG. By calling anime.path(), it enables that path to be used as a value for X/Y positioning for other animations. These can be stacked or strung together to create a timeline without the need for specified offset values.



Above There are plenty of examples of what is possible in Anime.js on CodePen at codepen.io/collection/XLebm

Moment.js

momentjs.com

23

Working with dates and times can be challenging. The native Date object provides little functionality to help format and manage time zones. Moment creates special objects that enable devs to parse and format dates and times any way that's required. The size can be kept small by only including the locales needed for each project.

Semantic UI

semantic-ui.com

24

Semantic UI is a set of common components that can be enabled as necessary within any project. Common patterns like breadcrumb navigations and toggle buttons encourage are first created with semantic HTML, which the library enhances. Integrations for frameworks like Vue and Angular are available to drop into apps that simplify interface creation.

Pell

github.com/jaredreich/pell

25

A lot of projects make use of a rich text editor. That might be for a comments section where styling options are limited but load times are important, or in a CMS where a large feature set is essential. While there are a multitude of WYSIWYG options out there, they can be large, rely on outdated dependencies or produce non-semantic markup.

Pell is a simple text editor weighing in at just over 3kB minified, making it smaller than options like TinyMCE or Facebook's Draft.js. There are also no dependencies to rely on, which makes Pell a drop-in replacement for any existing editor.

While others may provide a bigger feature set, Pell focuses on doing the basics well. Actions such as links, lists and images are present out of the box but custom features can be added to suit the needs of any project. The look and feel can also be customised, with Pell providing a SCSS variable file to overwrite as necessary.



Above By limiting the feature set, Pell can produce semantic HTML that can be used anywhere

**CASE STUDY
BLOOMBERG**

As Hillary Clinton became the first female nominee in the 2016 presidential election, Bloomberg put together a timeline of milestones in the American feminist movement that led to the historic moment.

To create the timeline, Bloomberg used D3 to pull in the data and start rendering dates. Each year created a <section> element, with subsections to hold information about Hillary Clinton and the Women's Movement.

Data is entered into a CSV file that can be updated through its CMS. D3 can then read that information with a dedicated csv() method and expose the data to manipulate as necessary.

The CSV also includes supplementary information about the numbers of women in Congress, professional occupations and the pay gap at the time. This data gets held in an object alongside each date. As the user scrolls through the timeline, callbacks update the charts to link all the information together. D3 will make the updated elements flash to indicate the change to the user.

This meant Bloomberg was able to show how two stories interacted in a visually appealing timeline, with D3 doing the heavy lifting.



Above As the user scrolls through the timeline the chart data stays up to date



Left As the screen narrows, D3 enables CSS to reflow the content to fit the screen

FEATURES

5 powerful planning apps





5 POWERFUL PLANNING APPS

Carl Cahill gathers together the most essential pieces of software that will help you achieve all of your prototyping tasks

 AUTHOR
CARL CAHILL

Carl is a UX and UI creative for brands, who was awarded Creative of the Year in the Wirehive 100 2013 and has over 10 years experience.

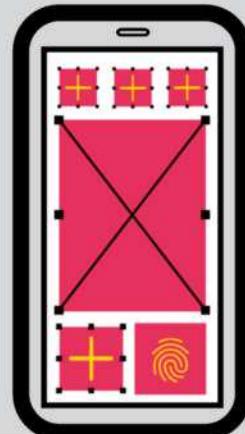
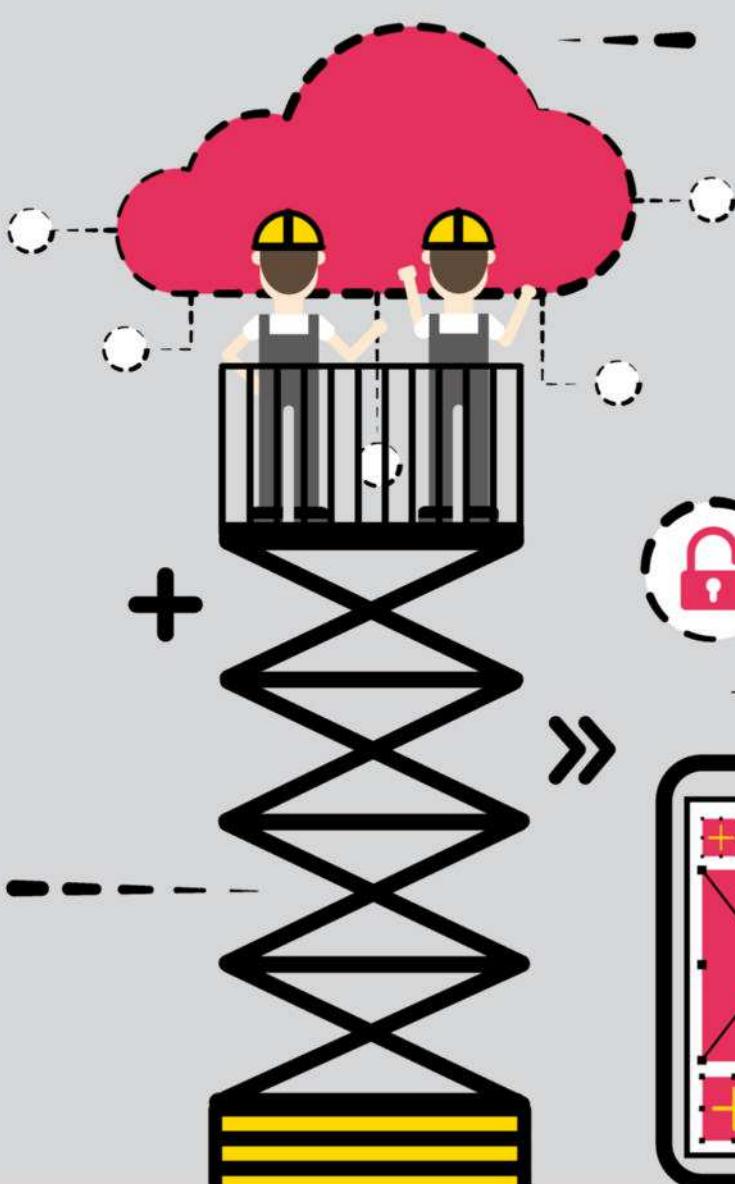
t: @carl_cahill
w: carlcahill.com

 ILLUSTRATOR
NEWTON RIBEIRO

Prototyping is an essential part of any digital design process. It helps us simulate our designs, test out journeys and user flows within our projects. Long gone are the days of printing and providing PDFs of designs.

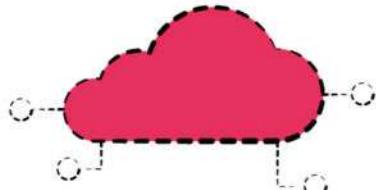
With these prototyping tools, you'll be set to meet the design challenges you might face, whether you want to create something beautiful or technical from an idea. With any prototype, it's important to test and play with your interface so you can validate the experience.

Most of these tools come with a price tag but some give free access for a single project or limited pages, letting you find the right application for your project.



FEATURES

5 powerful planning apps



The screenshot shows the proto.io interface. At the top is a navigation bar with icons for Undo, Redo, Patterns, Scroll, Addons, Screens, Assets, Fonts, Variables, Search, Share, Download, Saved, and Preview. Below the navigation bar is a toolbar with various icons. On the left, there's a sidebar for 'SCREENS' and 'CONTAINERS'. Under 'SCREENS', there's a list with '+ NEW SCREEN', 'Screen 1', 'Page 1' (which is selected), 'Page 2', and 'CTA'. Under 'CONTAINERS', there's a list with 'CTA' and 'Powerful prototyping'. A large central area shows a mobile phone screen with the text 'POWERFUL PROTOTYPING TOOLS' and a background image of mountains. To the right of the mobile screen is a 'LIBRARIES' panel and an 'INSPECTOR' panel. The 'INSPECTOR' panel shows an interaction for 'Page 1: Start 1' with the following details: Title: Go to screen "Page 2"; Trigger: Tap; Action: Go to screen...; Screen: Page 2; Transition: Slide right; Easing: Ease out - Cubic; Duration: 400 ms; Delay: 0 ms. There's also a 'Callback' section with a note: 'Executed after the action is completed'. At the bottom right of the interface are 'CANCEL' and 'SAVE INTERACTION' buttons.

PROTO.IO

(From \$24 per month)

Proto.io is an incredible contender for creating lifelike prototypes from rough ideas right through to fully fledged designs. The tool also provides many possibilities for your projects, including creating detailed animations and custom vector animations.

It's certainly one of the front runners when you're assessing tools to help create your prototypes. With Proto.io, starting a project is as simple as you want it to be. With only a rough idea sketched out, you can get cracking right away and start using predefined assets to evolve your concept quickly.

Once you're happy with your ideas, these can then be turned into more polished and presentable wireframes for

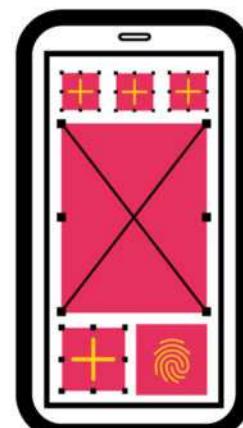
further validation and reflection. The next significant step after that enables you to tweak the design of your prototypes so they are as true to the end result as possible.

Proto.io is a web-based tool and comes with a bucketload of add-ons and features, which include the importing of Sketch and Photoshop files, VR prototyping, UI Libraries and even screen recording for user testing. This can really help if you are transitioning to and from other applications.

Ultimately, you will need to take some time to get to grips with this

TIP
Use interactions and callbacks within objects to customise nice bespoke interactive elements. You can get some really nice effects.

tool. There's a lot that can be done with it and there are a great number of options and menu items to play with. Once you've learned your way around it though, it will be a hard one to put away. The prospect of creating detailed animations really does make this an excellent tool to use and the perfect way to execute your ideas in as realistic a manner as possible.



PRO AND CONS

- ⊕ Great for design
- ⊕ Shareable prototypes (private/public)
- ⊕ Mobile app available
- ⊕ Record user tests

- ⊕ Great for animation and transitions
- ⊕ Works with Sketch and Photoshop files
- ⊕ Add-ons available

- ⊕ Able to add supplementary UI libraries
- ⊕ Supports virtual reality prototyping
- ⊖ Not great for offline use

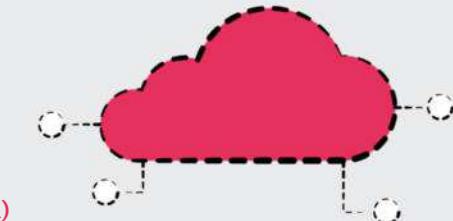
AXURE

(From \$29 per month)

 Axure has managed to build up a reputation as being one of the best wireframing tools on the market and the perfect choice when it comes to dealing with more complex projects requiring dynamic data. With Axure, you can really focus your attention on mocking up projects that are both more technical and require more attention when it comes to structure and data.

Although it's not necessarily the first choice for prototyping a high-fidelity design, it is nonetheless great at quickly taking the larger projects / software platforms through the first stage wireframe concepts.

A major benefit of Axure is that it handles dynamic content really well, enabling you to change and alter it



according to certain user journeys or interactions. This is achieved through a combination of conditional logic and manipulating pages, content blocks or text by setting variables and parameters.

But the potential of what you can do with Axure doesn't stop there. It's a great option for visualising flow charts and diagrams, which is just the thing for helping you to articulate some of the more technical journeys you might come up against.

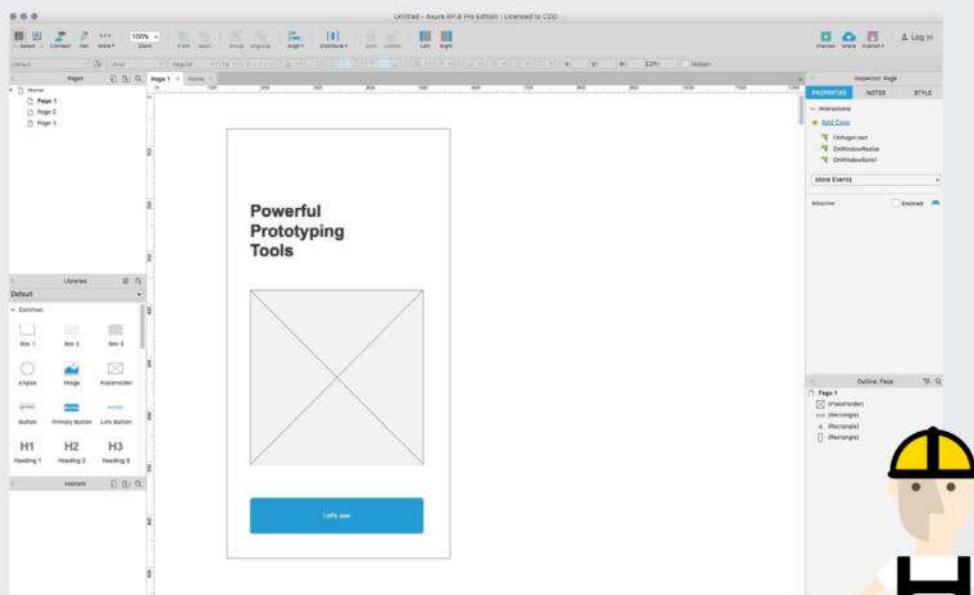
And talking of the technical aspects of a project, Axure should be top of your shopping list for tackling technical aspects of design, as well as data-led or dynamic platforms, whereby design is a mere cosmetic overhaul at the end. Function over form comes to mind.

TIP

Work with dynamic panels to see how interfaces change. Start simple with a tabbed box and expand from there. Play with variables and parameters too.

PRO AND CONS

- | | | |
|--|---|---|
| ⊕ Great for wireframing sites that need more structure | ⊕ Able to export as html files | such as flow charts and diagrams |
| ⊕ Excellent at handling dynamic data | ⊕ Great for mocking up more complex ideas | ⊕ Very functional |
| ⊕ Conditional logic | ⊕ Fantastic option for visualising elements | ⊖ Not ideal for prototyping a high-fidelity designs |



FREE TRIALS

FLUID UI

(Free for one project or from \$8.25 per month)

Fluid UI is an intuitive tool to build rapid prototypes and designs and packs some nice assets to get you going. The fact that it's only accessible online means it's great for creating a live prototype, commenting and editing your interface collaboratively.

MARVEL

(Free for two projects or from \$12 per month)

Marvel offers a really neat way of building pages and enabling you to simulate your design through a prototype. You are also able to turn paper-based drawings into prototypes through the app. Perfect for quick idea generation and testing your thoughts.

FIGMA

(Free for individuals, or free for up to three projects for teams or from \$12 per editor per month)

Figma prides itself on being a collaborative design tool whereby multiple users can work simultaneously on a project. Simply share your prototype, perform tests and see how your designs work.

MOCKFLOW

(Free for one project or from \$14 per month)

MockFlow's WireframePro app is a good prototyping tool alternative for you to use, especially if you're testing out new ideas. Although not the best option for design professionals, this certainly has a place for people wishing to try out ideas.

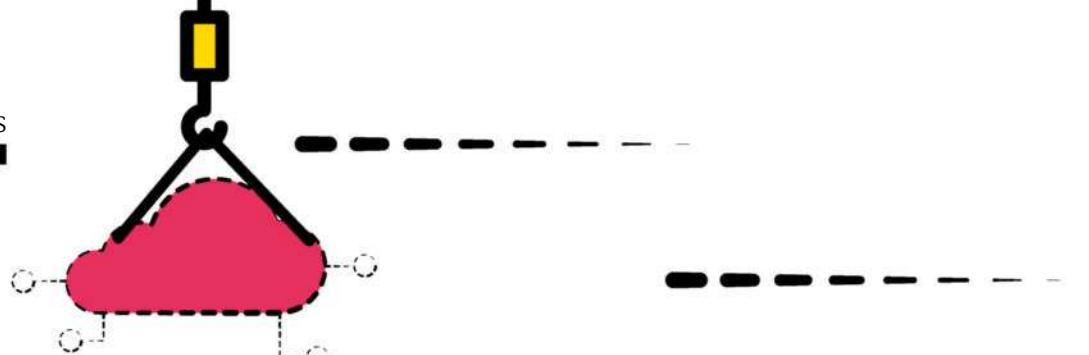
ZEPLIN

(Free for one project or from \$17 per month)

Zeplin is not necessarily a prototyping tool but it very much fits in that post-design and pre-development stage. It lets you to take your design and prototypes and hand them over to developers without the tedious task of creating guidelines.

FEATURES

5 powerful planning apps



SKETCH

(\$99 A YEAR, VARIOUS RENEW PRICES)

 Sketch is an application that's well loved within the design community. It's simple to use and gives you everything that you need to create beautiful interfaces. Up until recently, Sketch relied on third-party extensions to prototype with InVision but it now provides an environment all of its own.

Using predefined artboards, you can get going with Sketch quite quickly with very little effort; simply start loading in graphics or type. Designing in this tool is lovely and easy.

One of the features that works really well within Sketch is how it handles symbols. This is a neat way of packaging small or even large interface objects and

reusing them over and over again. With your symbols, you can also edit them in a non-deconstructive way. For example, you may have a button element packed into a symbol that uses text, an icon and border. You can reuse the symbol around your design and change the textual element if required. If you edit the symbol at source, you can change things like font style and colour and it will update all your symbols around your design. Very neat and often a big time saver.

As for the prototyping, you can draw relationships between objects on your

canvas and pages. These relationships will provide you with links between your pages that you can start to connect and enable you to simulate your users' journeys as they navigate through your site. Within Sketch you can also share your prototypes with a unique link and make any updates to the project as and when necessary.

Sketch is a favourite to many and definitely worth a look. It's a very clean and versatile design tool. There are a number of extensions available for it that help make the design process even faster or easier.

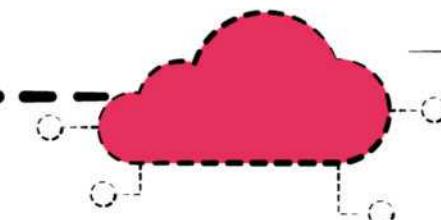
TIP
Use symbols to make your design process smarter. Wrapping an icon font like Font Awesome into a symbol can make placing icons faster.

PRO AND CONS

- + Great for design
- + Uncluttered user interface
- + Very flexible in terms of functionality

- + Easy to build prototypes
- + Build symbols and reusable assets
- + Add-ons available

- + Mirror your design in app
- + Easily share your prototype
- Animation options are limiting


Below In Sketch, relationships provide links between your pages, enabling you to simulate user journeys

The screenshot shows the Sketch application interface. At the top is a menu bar with Sketch, File, Edit, Insert, Layer, Text, Prototyping, Arrange, Plugins, Craft, View, Window, Help, and various icons for file operations. Below the menu is a toolbar with icons for Insert, Group, Ungroup, Create Symbol, zoom controls, and other tools. On the left is a sidebar titled 'Pages' showing 'Page 1' and 'Page 2'. 'Page 2' contains a section titled 'Sketch is one application' with a list: 'Sketch is one application', 'CTA', 'Sketch', and 'BG'. Below this is another section titled 'Page 1' with 'Powerful prototyping tools' and 'SEE' button. The main workspace shows two pages: 'Page 1' and 'Page 2'. 'Page 1' has a background image of mountains and text 'POWERFUL PROTOTYPING TOOLS'. 'Page 2' has a background image of mountains and text 'SKETCH' and 'Sketch is one application...'. A callout arrow points from the 'SEE' button on 'Page 1' to the 'Sketch' section on 'Page 2'. On the right side of the interface is a panel with various prototyping tools and settings, including 'Position', 'Size', 'Transform', 'Resizing', 'Prototyping', 'Target', 'Animation', 'Opacity', 'Blending', and 'Shadows'.



ADOBExD

(FROM £9.98 PER MONTH)

 Adobe XD offers the best environment for digital projects under the Adobe Creative Cloud collection of design tools. Although if you're a keen Adobe user and new to XD, you may not find the interface very familiar to begin with but it does stack up against the other leading tools out there. It is a jump if you've been designing in Photoshop for a while. However, it is worth it if you are a big Adobe fan.

This tool enables you to create high-fidelity designs and prototypes with very few restrictions. It will certainly always be among the armoury for the more visual projects. It's very design led and is very easy to use with some really neat features to make the design process more efficient and satisfying.

There are two modes to your canvas: these are Design and Prototype. Once

you have created a set of interfaces and artboards, you can start to draw relationships between clickable elements and pages. You can decide between transition styles like sliding, pushing and dissolving.

XD then lets you to run and export prototypes so you can test them and show them to clients.

TIP

Make good use of your assets with colours, character styles and symbols. They'll make your prototypes easier to build.



Above Adobe XD enables you to create high-fidelity designs and prototypes with very few restrictions

PRO AND CONS

- + Great for design
- + Easy to build interactions between elements with just a few clicks
- + Clean user interface

- + Run and export prototypes for easy testing
- + Can create designs and prototypes with very few restrictions

- + Within the Adobe family, although user interface may be unfamiliar to some
- Animation options are limiting

INVISION STUDIO

(EARLY ACCESS)

 InVision Studio is the design tool that we're all very excited to see. Due to be released soon, this tool promises some great features enabling you to create true-to-form visual prototypes with some fantastic features.

InVision, known for its online prototyping environment and its compatibility with Sketch and Photoshop, looks set to build on all this with its InVision Studio incarnation.

The new application and studio offers sophisticated animation tools to make your designs awesome. One of the most exciting features on the cards is the responsive design ability. This means that you could design purely from one artboard, achieving designs for mobile, tablet and desktop.

As a whole, InVision is a well respected platform for designers that offers

additional tools for any user including mood boards, project management and live annotating and collaboration. The one feature that also stands out is the Inspect tool, enabling developers to look at the designs and pick out things like colour references, sizes and even copy and paste rich text.

TIP

For now, get on the early access waitlist and check out their site. It's certainly worth experimenting with.



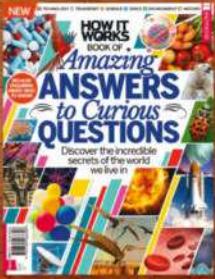
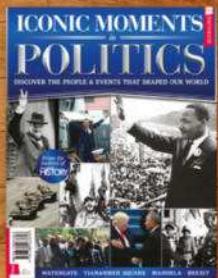
Above InVision Studio promises some great features enabling you to create true-to-form visual prototypes with some fantastic features

PRO AND CONS

- + Amazing animation potential
- + Great for design
- + Responsive design ability
- + Developer friendly with

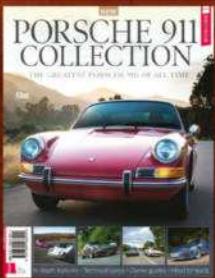
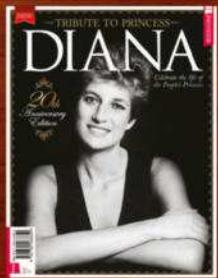
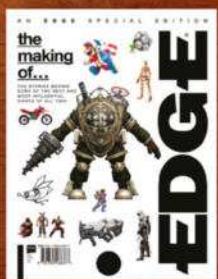
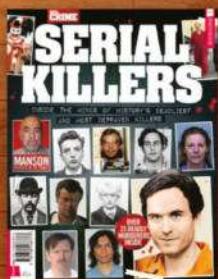
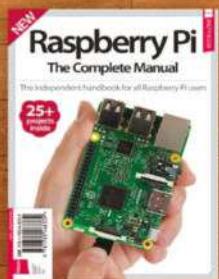
- + live annotation, collaboration and project management tools
- + Inspect tool allows users to pick out colour references,

- + sizes and duplicate rich text
- A bit buggy to begin with
- Easy to export prototypes
- App available
- Not yet out of early access



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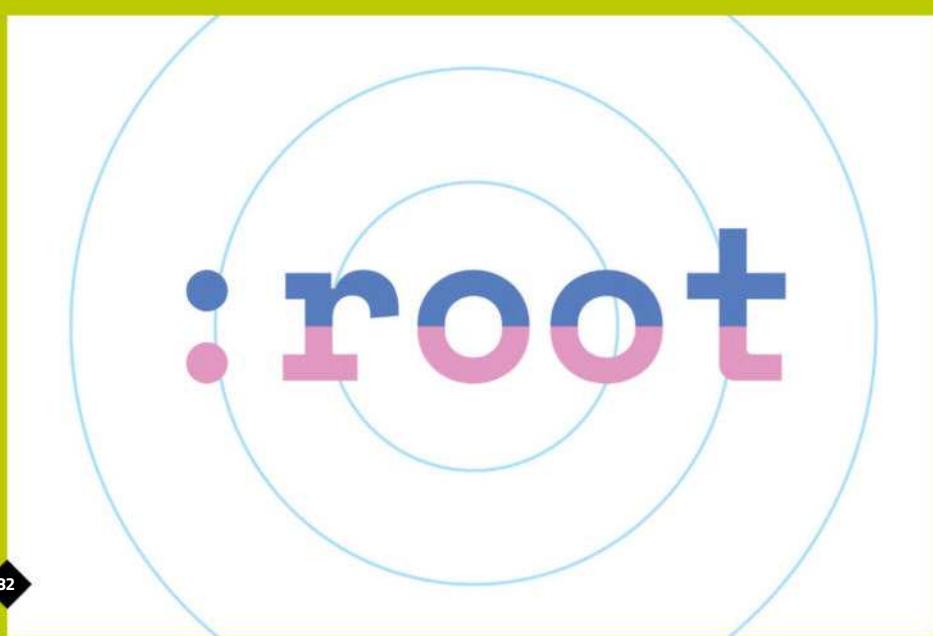
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★ VUE.JS AND WEBPACK

BUILD A SINGLE-PAGE APP WITH VUE.JS

Learn how to install Vue.js using the command line interface (CLI) and build a basic single-page application with CSS animations

 If you know JavaScript, then you also know about the endless line of frameworks that help make coding easier and faster. If you didn't already know what Vue.js is, it's a progressive JavaScript framework, which means if you already have a server-side application, then you can plug Vue into just one part of your application. Vue focuses on building user interfaces and it only works in the 'view layer'; it makes no assumption of middleware and backend and therefore it leaves you free to integrate other libraries and tools, and can be entirely used to build more robust single-page applications (SPA). Vue is very much like React where it also uses such things as a virtual DOM, props and state. While there's much more Vue can do, in this tutorial we will go through the basics of setting up an SPA using the vue-cli, with Webpack as our bundler/build tool. Then we will look at how we can create

simple but effective animations. We will also be using the new ES6 JavaScript syntax throughout, so having basic knowledge about that would be good.

USING VUE.JS

There are a couple of ways to get started with Vue.js, either use the CDN link in your HTML (which is without doubt the easiest way) or you can install it using the Node Package Manager (NPM) or use the command line interface – which is what we will be doing in this tutorial. We'll be using Visual Studio Code for this tutorial as we can simply use the built-in terminal.

GETTING STARTED

First, we need to install the vue-cli. The command line interface is available as an npm package. So make sure that Node.js and the npm command is

installed and available on your system, then open up your command line (or terminal) and enter in the following command to install the vue-cli globally on your local system:

```
$ npm install -g vue-cli
```

Now that we've installed the vue-cli globally, we can go ahead and install Webpack, which is a build tool that puts all of your assets, including JavaScript, images, fonts and CSS, in a dependency graph. To explain what makes Webpack the best build tool to use – not just with Vue.js, but with most other JS frameworks – would be a tutorial in itself, so we won't go into much detail on what Webpack does, we'll just touch on certain areas when needed. So to install Webpack we need to go back to our command line/terminal and enter the following command:

```
$ vue init webpack vueapp
```

What this will do is download a project folder called vueapp using the Webpack template. Executing the command brings up a few questions on the command line and you can click enter or no to all the questions.

The next step is to change into this new directory using the following command:

```
$ cd vueapp
```

WEBPACK'S HOT RELOAD

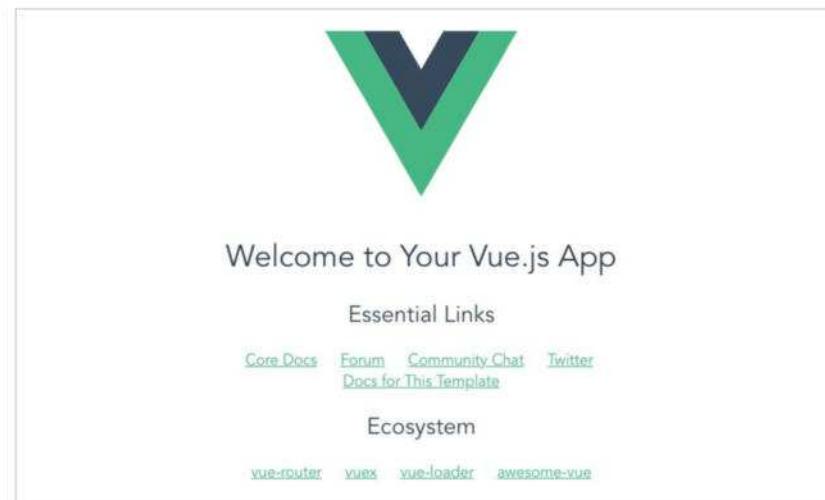
We can now run the app using the `run dev` command. This will automatically open up your app on your localhost port and you'll be presented with the basic Vue SPA on a local development server. The great thing about this development server is the 'hot reload' or 'Hot Module Replacement' functionality, which changes and saves your application while it's still running. This can significantly speed up development in a few ways:

- Retain application state, which normally gets lost during a full reload.
- Save valuable development time by only updating what has changed.

```
$ npm run dev
```

SINGLE FILE COMPONENT

Inside the `src` folder you'll see a folder called `components`. Open that up and you'll see a component called `HelloWorld.vue`. This is what is called a 'Single File Component' and is where we will place all of our code. So go ahead and open this up in your text editor



Above Vue focuses on building user interfaces, only working in the 'view layer'

and then delete everything between the `hello` class `div` that's inside the template tag. Leave the script as it is and remove any CSS. Then open up the `App.vue` file and delete the CSS and the image `src` link that's pointing to the Vue.js logo. Now we should have a blank canvas to work from.

```
<template>
<div class="hello">
</div>
</template>
```

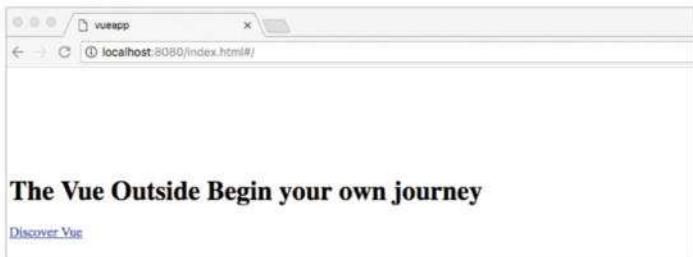
SASS LOADER

When we come to add in our CSS, we want to be able to use Sass (scss). However, Webpack/Vue doesn't recognise Sass as yet, so we need to install the Sass loader using `npm` so it gets added to our dev dependencies. We can then include SCSS files into our components (about which we will go into more detail later).

```
$ npm install sass-loader node-sass --save-dev
```

With all our dependencies installed and our `HelloWorld` single file component cleaned out, we can begin to add in some new content. So within the component, go to the script section and change the title string and add a new subtitle and string within the return block, as shown.

```
export default {
  name: "HelloWorld",
  data() {
    return {
      title: "The Vue Outside",
      subTitle: "Begin your own journey"
    }
}
```



Above Within the component, go to the script section and then change the title string

Right You'll need to add a logo and background image to the assets directory

```
> }  
};
```

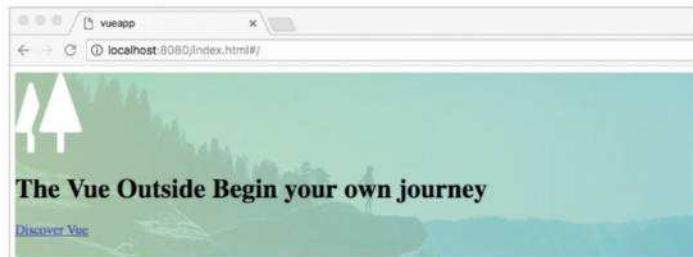
ADD THE HTML

At the very top of our component we have the <template> tag. This is where all of our markup will go. Within the class div that we left in, go ahead and add in the markup shown. One thing you'll notice is that we've used the BEM naming convention on classes and IDs. However, you don't have to abide to that, using the standard naming convention is fine. Then you'll need to add a logo and background image to the assets directory. Lastly we used what is called text interpolation using the "Mustache" syntax (double curly braces). This data binding at its basic form enables us to bind data to the Vue instance.

```
<header class="header">  
  <div class="header__logo-box">  
    <a href="index.html">  
        
    </a>  
  </div>  
  <div class="header__text-box">  
    <h1 class="heading-primary">  
      <span class="heading-primary--main">  
        {{ title }}  
      </span>  
      <span class="heading-primary--sub">  
        {{ subTitle }}  
      </span>  
    </h1>  
    <a href="#" class="btn btn--white btn--  
animated">Discover Vue</a>  
  </div>  
</header>
```

SCOPED CSS

One of the great things about using Single File Components is the ability to add our CSS straight into the component, which is only specific to that component. So for instance, if you split up your application into three different components, such as the Header, Sidebar and Footer, you can just



add the CSS that styles the header into the Header component and add the CSS that styles the sidebar into the Sidebar component and so on. We can make sure our CSS is specific to that component by adding in the keyword scoped as shown. Plus we also need to specify what CSS preprocessor we will be using and in our case it's Sass/scss.

```
<style lang="scss" scoped>  
</style>
```

@IMPORTING CSS

Because we're using Sass, we've created a few variables to use and to help keep our file structure clean, we've stored these in their own file located in a folder called `Sass`. We can (as normal) use the `@import` rule to pull in this file. Or you can simply add them at the top. Plus we want to use a Google font called 'Lato' so we can import that in too.

```
// header gradient  
$blueGradient: rgba(103, 188, 223, .8);  
$lightGreen: rgba(188, 219, 183, .9);  
$pinkGradient: rgba(217, 105, 142, .8);  
$midGreen: rgb(85, 197, 122);  
$darkGreen: #28b485;  
$white: #fff;  
$mainFontColor: #777;  
$font: 'Lato', sans-serif;  
@import "sass/_variables.scss";  
@import url("https://fonts.googleapis.com/  
css?family=Lato");
```

THE HEAD SECTION AND LOGO

We can start off by adding in our main background image. This will be given the maximum view height so it's responsive to the browser window. We will then add in a nice gradient overlaying our image using our variables. Then we can nest our logo rules and position that top left. There is an animation property included but we will go over that in a later step.

```
.header {  
  position: relative;
```

```

height: 100vh;
background: linear-gradient(to right, $lightGreen,
$blueGradient),
url("../assets/imgs/header-bg-02.jpeg") center no-
repeat;
background-size: cover;
.header__logo-box {
position: absolute;
top: 4rem;
left: 4rem;
.header__logo {
height: 4rem;
animation: animateDown 1s ease-in-out;
transition: all 0.2s ease-out;
&:hover {
transform: rotate(-5deg);
}
}
}

```

"We can make sure our CSS is specific to that component by adding in the keyword 'scoped'"

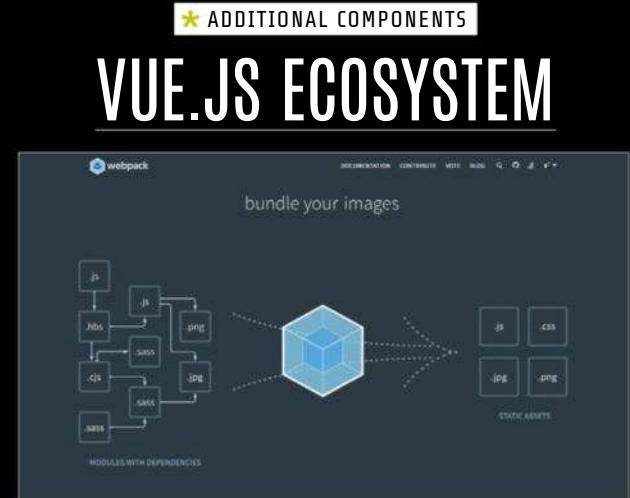
PAGE HEADING AND SUBHEADING

The page heading and the subheading can be styled next. The idea here is to animate these as the page loads. The animation property and value has already been added but of course we still need to link these up to keyframes later. There is one thing we want to point out. Often when you animate text, you get a very subtle shake or flicker. Using the backface-visibility property and setting its value to hidden should prevent that from happening.

```

.heading-primary--main {
color: $white;
text-transform: uppercase;
display: block;
font-size: 2rem;
font-weight: 400;
letter-spacing: 1rem;
animation: animateLeft 1.2s ease-out;
text-align: center;
backface-visibility: hidden; /* Prevent animation shake */
font-family: $font;
}
.heading-primary--sub {
display: block;
letter-spacing: .9rem;

```



Webpack

In case you don't know what Webpack is and what it's all about, it can simply be described as a static module bundler for modern JavaScript applications. It helps to bundle all of the different modules and then it packages them into one bundle or more. At the time of writing, Webpack 4 has been released, which offers better features and improvements that will definitely make your development flow a lot easier.

Vuex

Like every other component-based framework, it can become difficult to keep track of state when your application begins to grow – when there is a lot of data moving around from one component to another, we need some sort of state management solution. That's where Vuex comes into play. State basically means the current working status of an app. It is determined by what data exists and where such data can exist at a given time.

Dynamic Route Matching

Very often we will need to map routes with the given pattern to the same component. For example we may have a `User` component which should be rendered for all users but with different user IDs. In `vue-router` we can use a `:dynamic` segment in the path to achieve that:

```

const User = {
  template: '<div>User</div>'
}

const router = new VueRouter({
  routes: [
    // dynamic segments start with a colon :
    { path: '/user/:id', component: User }
  ]
})

```

Now URLs like `/user/foo` and `/user/bar` will both map to the same route.

A dynamic segment is denoted by a colon `:`. When a route is matched, the value of the dynamic segments will be exposed as `this.$route.params` in every component. Therefore, we can render the current user ID by updating `User`'s

Vue-router

If you're developing an SPA with Vue and your app consists of multiple views, then you'll need a way to navigate through your app and routing becomes a core part of your project. When adding `vue-router` to the mix, all we need to do is map our components to the routes and let `vue-router` know where to render them.

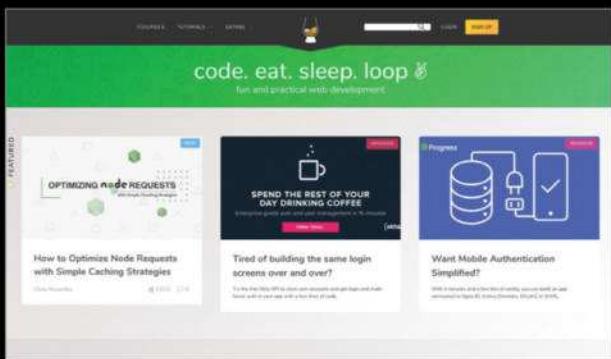
FURTHER LEARNING

 To learn more about Vue, you don't have to go much further than the documentation itself (<https://vuejs.org/v2/guide/>) – it's a comprehensive guide that is updated and it's certainly a great place to start. However, you can find some great free video tutorials on Vue.js by looking on websites such as:



- <https://www.vuemastery.com/>
- <https://egghead.io/browse/frameworks/vue>

And if video isn't your thing and you would rather follow written tutorials, then you can find some great tutorials on:



- <https://scotch.io/>
- <https://css-tricks.com/tag/vue/>

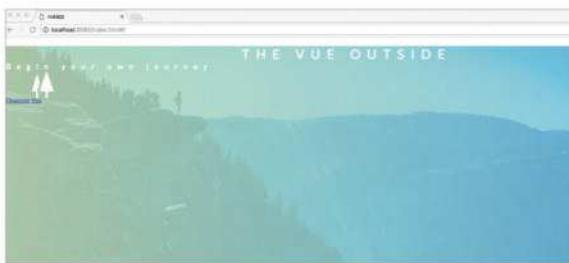
You can also take a look on GitHub (<https://github.com/vuejs/>), where you will find snippets of information on various apps that people have built using Vue. But that's not all; you can clone or download these apps and take a good look at the source code to get a better idea of how things are done.

```
▶ font-size: 1.16rem;
color: $white;
animation: animateRight 1.2s ease-out;
margin-bottom: 4rem;
margin-left: 0rem;
font-family: $font;
}
```

BUTTON STYLES

The most important thing about landing pages or head sections of a web page is the call to action button (CTA). Our CTA is going to be a big white button centred underneath our page title. To give our CTA button some life, we can create a hover animation that gives us a nice ripple-like effect. Again, we have added in an animation property but haven't yet defined that using keyframes – which we are pleased to say is what we will be doing in the next few steps.

```
header__text-box {
position: absolute;
top: 35%;
left: 50%;
transform: translate(-50%, -50%);
text-align: center;
.btn:link,
.btn:visited {
text-transform: uppercase;
text-decoration: none;
padding: 1.2rem 2.9rem;
display: inline-block;
text-align: center;
transition: all 0.2s;
position: relative;
&:hover {
transform: translateY(-0.3rem);
box-shadow: 0 1rem 2rem rgba(59, 105, 124, 0.4);
}
&:active {
transform: translateY(-0.1rem);
box-shadow: 0 0.5rem 1rem rgba(59, 105, 124, 0.4);
}
}
.btn--white {
color: $mainFontColor;
background: #fff;
border-radius: 10rem;
animation: animateUp 0.8s ease-out;
margin-left: -1rem;
font-size: 1rem;
font-family: $font;
}
```

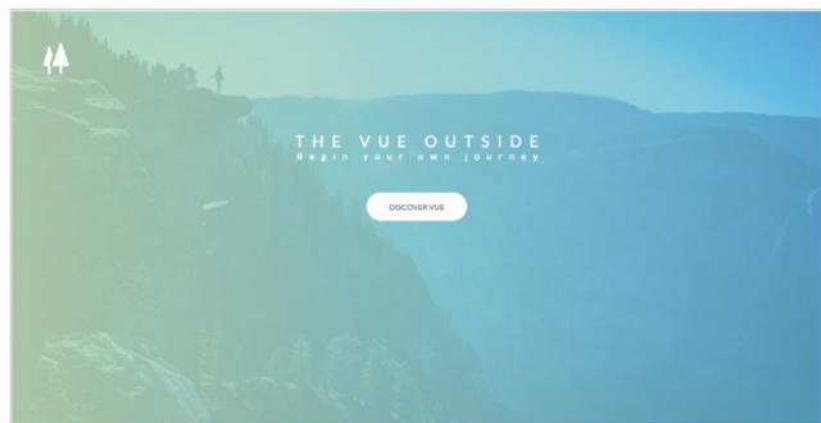


```
.btn::after {
  content: "";
  display: inline-block;
  height: 100%;
  width: 100%;
  border-radius: 10rem;
  position: absolute;
  top: 0;
  left: 0;
  z-index: -1;
  transition: all 0.4s;
}

.btn--white::after {
  background: #fff;
}

.btn:hover::after {
  transform: scaleX(1.4) scaleY(1.6);
  opacity: 0;
}

.btn--animated {
  animation: animateUp 0.6s ease-out 0.5s;
  animation-fill-mode: backwards;
}
```



Above left The page heading and the subheading can be styled next. The idea here is to animate these as the page loads

```
@keyframes animateLeft {
  0% {
    opacity: 0;
    transform: translateX(-10rem);
  }
  80% {
    transform: translateX(1rem);
  }
  100% {
    opacity: 1;
    transform: translate(0);
  }
}

@keyframes animateRight {
  0% {
    opacity: 0;
    transform: translateX(10rem);
  }
  80% {
    transform: translateX(-1rem);
  }
  100% {
    opacity: 1;
    transform: translate(0);
  }
}
```

“With regards to what Vue can do, we’re just touching the surface”

KEYFRAME ANIMATIONS

Animation on the web is getting more and more use than ever before – even more than in the days of Flash! Some of the animations we can do these days using CSS, JavaScript and SVGs are amazing and fun! So let’s not break the trend and add in some simple animations to our Vue application using `@keyframes`. The animation names have already been added to the specific rules as we went along, so once you’ve added these keyframes to the CSS and refreshed the page, you will see how they look.

RECAP

We’ve just created a simple single-page application using Vue.js and Webpack. We’re sure that now you can see the usefulness of using single-page components – even with this basic setup. With regards to what Vue can do, we’re just touching the surface and we’d encourage you to explore Vue.js further. Things to look at are the ‘vue router,’ ‘vuex’ and how you can do AJAX calls using ‘axios’. Then you can start creating some really powerful applications with this superb JavaScript framework. It probably won’t be long before Vue.js becomes the most popular JS framework. ■



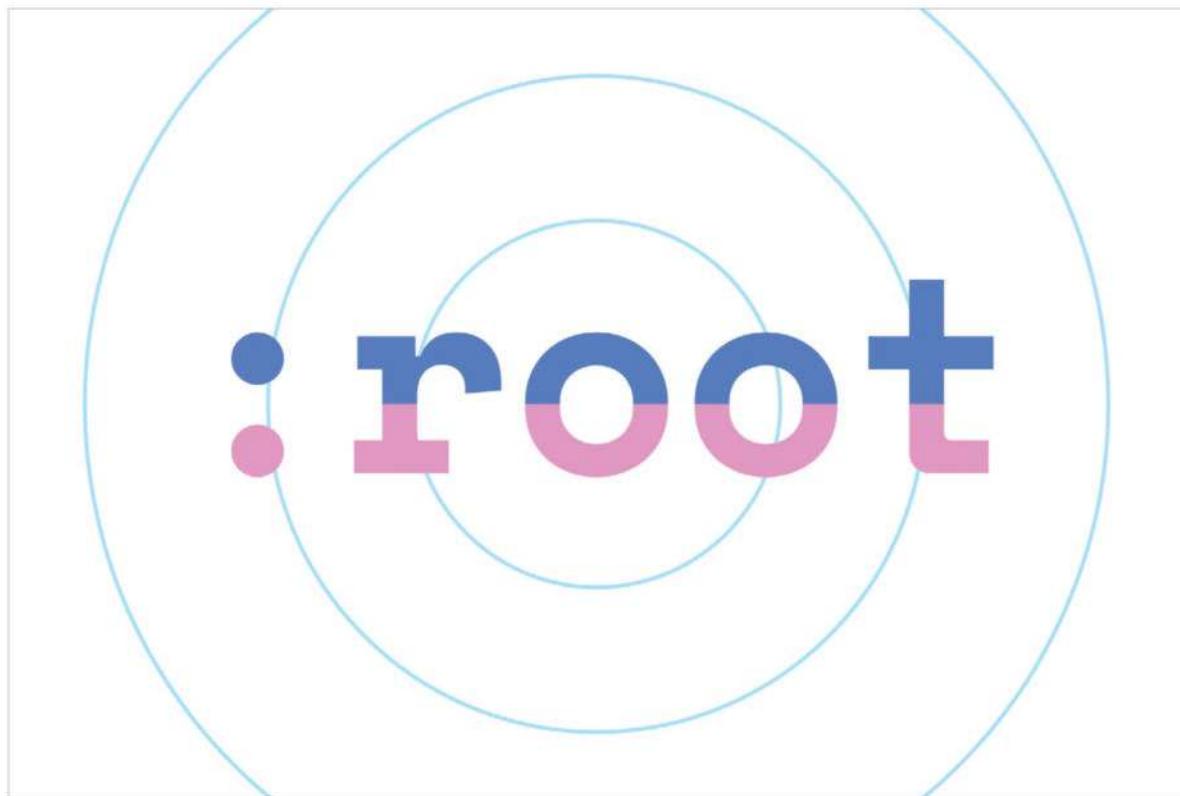
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front-end development

* CSS

AN INTRO TO CSS CUSTOM PROPERTIES

The promise of future-proof CSS and why you should start writing valid CSS. Learn the basics with Krisztian Puska

One of the single best features of CSS processors is variables. Having the ability to declare once and reuse the variable across your project should not be optional in any system. Using a pre-processor like Sass or Less gives you at least one extra build step, which can be a pain if you just want to build a thing fast. CSS has come a long way since the dark days of table hacks, so let's look into one of the most useful aspects: custom properties.

We'll start with a simple example.

```
:root {  
  --color-red: #fc4752;  
}
```

```
.site-navigation {  
  background-color: var(--color-red);  
}
```

```
.site-footer {  
  color: var(--color-red);  
}
```

The `:root` pseudo selector targets the highest-level parent element in the DOM, giving all elements access to `--color-red`. Yes, CSS variables definition should start with `--`, and you can access them anywhere with `var()`. Well, anywhere that is cascaded under our `:root` selector.



Above With `var()` you can also define a fallback value, which will be used if the given variable is unreachable or non-existent

“The ability to declare and reuse the variable across your project shouldn’t be optional”

With `var()` you can also define a fallback value, which will be used if the given variable is unreachable or non-existent for the class.

```
.site-navigation {  
  background-color: var(--color-red, red);  
}
```

Values are inherited from the DOM, which means you can make them more specific.

```
:root {  
  --color: red;  
}  
  
.site-navigation {  
  --color: green;  
  
  background-color: var(--color);  
}  
  
.site-footer {  
  color: var(--color);  
}
```

Every `var(--color)` is red, except every `var(--color)` under `site-navigation`. Generally speaking it's not an ideal practice to overwrite a value that is already defined but there are cases in which a scoped value is still the most adequate solution.

* CUSTOM PROPERTIES

THE BENEFITS OF CUSTOM PROPERTIES



When a CSS variable changes, the browser repaints the already rendered view without any additional push

+ Custom properties (or CSS variables) are not a new feature – they have been in the CSS spec since 2014 – but browser vendors lagged behind. Firefox adopted early, Safari and Chrome in 2016 and in late 2017 even Edge implemented it fully, giving it 88% global coverage with IE and BlackBerry's browser pulling back the number. In 2018 it is safe to say that it's ready for the modern web.

Choosing the native implementation over a rigid processor gives you much more than a simpler development process. Custom properties are live, they can be changed based on media queries, element scope or with plain JavaScript. When a CSS variable changes, the browser repaints the already rendered view without any additional push. It's low-level and fast.

The ability to iterate and change things without unnecessary layers of abstractions enables you to ship faster and ultimately build a better product.

★ RESOURCES

SUGGESTED READING

There are many great resources on this topic; here are a few that will help you get a better handle on custom properties.



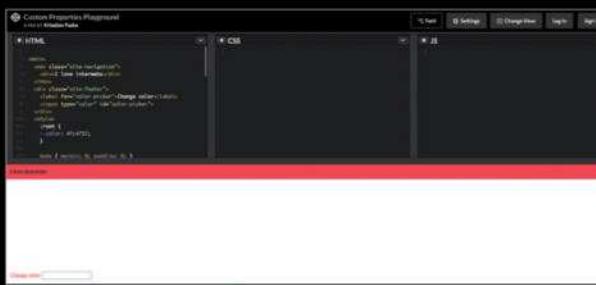
CSS Tricks

<https://css-tricks.com/tag/custom-properties/>
Features many articles with a lot of really interesting details.



CSS Variables: Why Should You Care?

<https://developers.google.com/web/updates/2016/02/css-variables-why-should-you-care>
More of a technical perspective from Google.



CodePen

<https://codepen.io/krisztianpuska/pen/gewvmZ>
The CodePen for this article.

- These are the basics but you can do so much more. Another great example is changing layout based on viewport size.

```
:root {
  --color-red: #fc4752;
  --flex-layout: row;
}
```

```
@media (max-width: 640px) {
  :root {
    --flex-layout: column;
}}
```

```
.site-navigation {
  display: flex;
  flex-direction: var(--flex-layout, row);
```

```
background-color: var(--color-red, red);}
```

```
.site-footer {
  color: var(--color-red);}
```

“You can define a base theme, build your website around it and just switch it out”

Under 640px the media query triggers, changing the flex direction to column on site-navigation class, making its content vertical (column) instead of the default horizontal (row). In this example, because of the default variable given to site-navigation, you don't even need the initial :root definition of --flex-layout; instead it will actually go straight to row.

This is cool but it's not all fun and games just yet. For instance, since the media query is not an element, the breakpoint value cannot come from a custom property. Although CSS Working Group has a draft of using `env()` for queries, vendor implementation and proper support is probably years away from where things are today.

That's okay. We will stick to what we have now. One more advanced use case for a custom property is switching themes. You can define a base theme, build your website around it and just switch it out, with the browser doing the heavy lifting. And it's not even that heavy.

Essentially think of it being along the lines of Twitter's Night Mode, but without you actually switching the CSS (I see you).

```
<main>
  <nav class="site-navigation">
    <div>I love interwebs</div>
  </nav>
  <div class="site-footer">
    <label for="color-picker">Change color</label>
    <input type="color" id="color-picker">
  </div>

  <style>
    :root {
      --color: #fc4752;
    }

    body { margin: 0; padding: 0; }

    main {
      display: flex;
      flex-direction: column;
      justify-content: space-between;
      height: 100vh;
    }

    .site-navigation,
    .site-footer {
      padding: 12px;
    }

    .site-navigation {
      background-color: var(--color, red);
    }

    .site-footer {
      color: var(--color);
    }
  </style>

  <script>
    var colorPicker = document.querySelector("#color-picker");
    colorPicker.addEventListener("change", function() {
      document.documentElement.style.setProperty("--color", this.value);
    })
  </script>
</main>
```

Input colour's picked value replaces the document's `--color` value, making the change without a hitch. You can play with blend modes, alpha channel colours or pngs – endless possibilities and fun.



Now with your future-proof CSS in place, which doesn't depend on any third-party developer and uses only custom properties, there is a good chance you are covered and ready to kick-start production.

But what if you want something other than variables in your code, let's say CSS modules? As of today, for existing CSS features like modules or nesting, you couldn't spare the extra build step any longer, but you can implement it with the sweet promise of not having to rewrite code when vendors catch up with the spec.

Instead of refactoring your CSS every time you want to improve your output, you should write your code in a specification aligned that way in the first place. This is the main difference between pre- and post-processors. A pre-processor actually writes the CSS for you (basically, from a text file), while a post-processor aligns your already valid CSS for more browser support, the latter giving you more flexibility in the process.

Using the native method always beats the workaround, and having the working knowledge of future technologies is the best position you can be in when learning CSS. ■

Top Under 640px the media query triggers, changing the flex direction to column, making the content vertical instead of horizontal

Above You can build your website around a base theme and just switch it out with the browser doing the heavy lifting



* STANDARDS

PREVENTING THE INTERNET DARK AGE

Jamie Hoyle on how open standards can stop data loss on a massive scale

From HTTP/1 to CSS, the early internet was built on open standards. It is thanks to the wider technology community's desire to work together to build a shared fabric of modern communication that we are here today. Unfortunately nowadays, with a technological culture where an increasing amount of online activity takes place via integrated products and apps rather than through websites, things simply aren't so straightforward.

Truth be told, we have absolutely no idea what the internet will look like 20 years from now. We don't know what browsers we will be using, what features they will support or even if we will be using browsers at all. The further we stray from open standards, the more likely it is that future generations will not be able to see the content of the world wide web as it stands today.

One example of this is Google's AMP project. While it is open source, it's not an open standard: Google is the arbiter of what the AMP specification looks like and that specification is designed solely for

Google's benefit. It replaces standards-backed HTML with a subset of tags that Google deems helpful to itself. While I'm a fan of how Google's investment in Chrome has transformed modern browser technology, its approach to AMP should worry proponents of the open web.

When the technologies of today's web are obsolete, there's an increasing fear that our children won't be able to retrace our steps and find out more about the world we lived in. It's the great irony of the digital age: in a time where more information is recorded than ever before, we risk not being able to replay anything at all.

Archiving companies and institutions need to sit down and define a standard for archiving API responses. So much of how we interact with the web – whether that's through platforms like Twitter, WhatsApp or Instagram – is carried out via API-backed native applications and yet we have no standardised way to store and replay this content. At the moment, the Web ARCHive (WARC) format is the ISO standard for storing and preserving web data but no suitable equivalent exists for APIs. At MirrorWeb, we already have an internal standard for how we archive APIs and personally I would welcome a wider industry discussion on the most effective way to do this going forward.

Developers, on the other hand, need to think heavily about making platforms more accessible and making sure they better conform to web standards. A lot of modern websites are not designed for the kind of tooling that web crawlers and screen readers use. Building accessible websites isn't just a nice thing to do: it's the law and it's time we started holding companies more accountable to that. Making websites accessible may take time but it should still be an essential part of your workflow. In the short term, you're helping out your customers and that can only be a good thing. In the long term, you're making sure that future generations can learn about our fondness for cat GIFs.

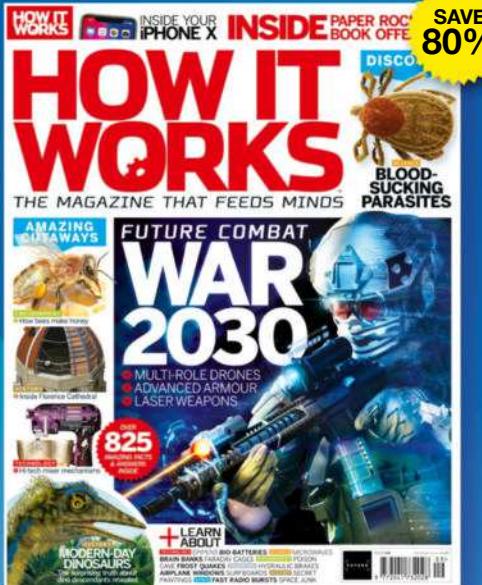
As a developer working in digital preservation, I know only too well the challenges that the web has ahead of it. It is essential that we take action soon to avoid an internet dark age and it's only through a concerted community effort that we'll avoid loss of public information on a scale not seen since medieval times. If you need any more convincing, just think of the fallout when GeoCities shut down: can we really afford to have a similar thing happen to the entirety of the web? ■

PROFILE Jamie is the head of product development at MirrorWeb, focusing on new archiving technologies. You can follow all of his tweets @mightyshakerjr.

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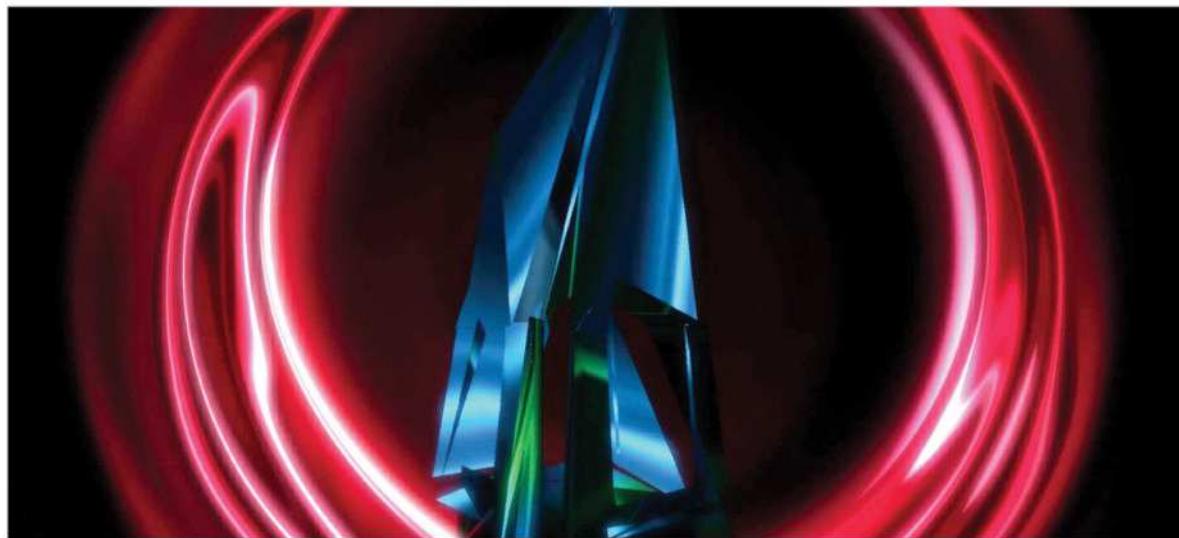
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★ GRAPHIC SHADERS

APPLY IMAGE FX WITH GRAPHIC SHADERS

Richard Mattka continues to explore graphic shaders, focusing on blurs, vignettes and visual FX in this third tutorial of an ongoing series

 Graphic shaders enable a wide range of effects by working directly with the graphics hardware of devices. In the previous articles, we learned what shaders are and created our first ones. We also learned about post-processing, making greyscale and using sepia tones.

This tutorial is going to continue delving into processing images. It's still just scratching the surface of what can be done but will give you something practical you can use. As always, my primary goal is to get you inspired so you can start creating your own effects as soon as possible.

IMAGE POST-PROCESSING

Image processing is everywhere. Instagram filters, blur effects, transformations and colour-grading for film are just a few examples. These effects can also work with video, since it's simply a stream of images.

We are working with fragment shaders, the last shader in the graphics pipeline. The function of this shader is to take in the position of the fragment (pixel) and return the colour it should be.

The most basic shader could simply pass through the current colour values of an image and do no manipulation to the pixels. How we manipulate the pixel value from there is the effect.

OUR FIRST BLUR SHADER – A SIMPLE BOX BLUR

In the previous article we did some nice effects with images and colour. Another great effect to add to our toolbox is image blur. Blurring images can be used for anything from emulating camera focus to depth of field effects. Let's jump in and make a blur effect.

In order to see our shader, we need to render it. As in previous articles, we'll make use of a WebGL rendering tool, such as Shadertoy. It gives us a nice code window to practise in and a render window to see our work.

1. To get started, go to <https://www.shadertoy.com/> new in a browser that supports WebGL.
2. Just below the code window, you will see four boxes. Click on the first one labelled Channelo.



Above A simple box blur – functional and fast

Select the Texture tab and pick an image you'd like to use as a texture.

3. You'll see a sample shader code all ready to go in the code window. Delete it, so that we can write our own.
4. Type in this new code and press the black play icon at the bottom of the window. This will execute the shader code.

```
float blur = 5.0; // box blur strength OR box size
```

```
void mainImage( out vec4 fragColor, in vec2 fragCoord ) {

    vec3 total = vec3(0.0); // holder for the colour values
    for (float i=-blur; i <= blur; ++i) {
        for (float j = -blur; j <= blur; ++j) {
            vec2 xy = fragCoord.xy + vec2(float(i), float(j));
            vec2 uv = xy/iResolution.xy;
            vec4 col = texture(iChannel0, uv);
            total += col.rgb;
        }
    }
    float area = pow((2.0*blur+1.0),2.0); // area of box
    vec3 avg = total.rgb/area;
    fragColor = vec4(avg, 1.0);
}
```

If all went according to plan, you should see a blurred version of your image. So what did we do?

This blur effect is commonly known as a box blur. There are many types of blurs, such as fast blur and gaussian blur. Each one has a different approach, but typically involve a process of passes or multi-sampling. The simplest way to think of this effect is that it averages the values of pixels nearby a given pixel to blend them together.

We start out the process by defining a blur amount. This sets the dimensions of the 'box' around the pixel we will sample and then average. We set up a total variable in order to store the colour values,

WHAT ARE GRAPHIC SHADERS?

★ SHADERS

Shaders can be used to create advanced effects that are optimised for performance

+ If you missed previous articles or are new to graphic shaders, here is a quick primer.

Multiple shaders work together in the graphics pipeline. Some are programmable, some are locked to the hardware. We're most interested in two shaders in the pipeline – vertex shaders and fragment shaders. These are the core of the OpenGL Shading Language and the WebGL graphics pipeline. We're going to focus on fragment shaders in these tutorials.

GLSL (OpenGL Shading Language) shaders compile and run on a wide range of platforms. You can apply what you learn to any environment that uses OpenGL, OpenGL ES or WebGL. This means you can use this knowledge for websites, three.js, iOS games, interactive installations, Unity, openFrameworks, Processing and many others.

What is a fragment shader?
This shader, which is typically the last in the pipeline, instructs each fragment or pixel what colour it should be. It does this by setting a value for `fragColor` in the code's 'main' function. It's where we'll create our photo filters, animations, effects and so much more by manipulating the colours of the pixels.

Vertex shaders
Vertex shaders handle the processing of individual vertices. They take a vertex as an input and return one as an output in a 1:1 mapping. Because we won't be diving into manipulation of 2D or 3D primitives or geometry, we don't need to do anything with these to get started. Just know that it is the first step in the pipeline and for now is essentially giving us a canvas to colour.

★ OPTIONS

DIFFERENT SHADES



Loading textures into shaders can open a world of possibilities

Texture data

To grab specific pixel data for a loaded texture we use the following:

```
vec4 col = texture(iChannel0,uv);
```

iChannel is the variable holding the texture data, uv is a two dimensional variable specifying the fragment or pixel to obtain data for. You could grab data for the current pixel, or other pixels, like we would in a blur effect. The flexibility of this enables us to use textures in combination or as non-visual data. For example, you could load a texture loaded with audio data into the pixels and use that as source for an effect. The possibilities are endless.

Uniforms

Each render tool will have its own little nuances, such as built-in uniforms (variables) passed to the fragment shader, for things like Time or Resolution. Shadertoy uses iTIME, iResolution and iMouse, for example. These are super easy to port across other implementations such as three.js or Unity or your own custom WebGL because most are standard and have only slight variations in name.

Normalised values

Often in shaders we work with normalised values. This means they range from 0.0 to 1.0. They can be more precise (more digits past the decimal), but they have this range. RGBA values are normalised. We also typically use screen resolution and fragment position to create normalised uv or position values. For example:

```
vec2 uv = fragCoord.xy / iResolution.xy;
```



- ▶ keeping them separated into their rgb components using a vec3.

Using two `for` loops, we are simply adding our xy fragment as usual with the slight variation of adding `i` and `j` inside the loop (as offsets to the position), and getting the corresponding texture value. We normalise this value and add it to the total, so we end up with a total of all `rgb` values inside the 'Box'.

Using length times width in the form of $(2 * \text{blur} + 1) * (2 * \text{blur} + 1)$ we get the area of the box. I used the `pow` function to show you how it works, in the form of `pow(value, exponent)`. Then we calculate the average by dividing the total variable by the area.

Challenge: Try targeting specific channels of the `rgb` to blur. Can you blur out the blue channel only? Try combining some of the previous colour effects with this one.

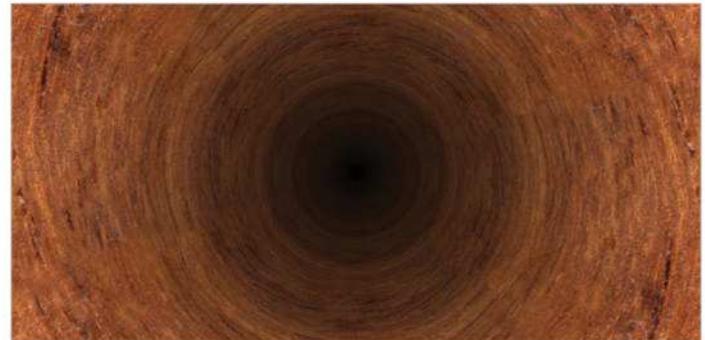
OUR SECOND IMAGE EFFECT – VIGNETTE

Another invaluable post-processing effect is a simple vignette. This can be great when applied subtly in photos or film to create a more polished look and draw focus to your subject. Give the code below a try:

```
float falloff = 0.5;
float strength = 0.5;
void mainImage( out vec4 fragColor, in vec2 fragCoord ){
    vec2 uv = fragCoord.xy/iResolution.xy;
    vec4 col = texture(iChannel0, uv);
    float d = distance(uv, vec2(0.5));
    col *= smoothstep(0.8, falloff * 0.8, d * (strength +
    falloff));
    fragColor = col;
}
```

You should now see a lovely vignette effect applied on your image.

We added new `falloff` and `strength` variables to the top of the code; you can season these to taste. We also used a new function called `distance`, which simply returns the distance between two points. In this case, we wanted to know the distance from the current pixel `uv` (normalised between 0.0 and 1.0).



and 0.5. In other words: what is the distance from the centre of the image?

Then we multiplied our current colour value by the result of the `smoothstep` function. `Smoothstep`, you may recall, gives interpolated value between 0 and 1, based on the provided two ‘edges’ and the source value, which we defined here as the distance the pixel is from centre, multiplied by the strength of the effect and the falloff.

Challenge: Try experimenting with those 0.5 values in the `smoothstep` function to see what effects you get. Change the distance line to use `vec2(0.75,0.75)` and see what effect that has. Can you make off-centred or coloured vignettes?

FINAL IMAGE SHADER – TUNNEL ANIMATION

Creating animations with shaders is a great way to show how easy it is to make great effects with minimal code. Try this new code out.

```
void mainImage( out vec4 fragColor, in vec2 fragCoord )
{
    vec2 uv = fragCoord.xy/iResolution.xy; // normalise
    vec2 p = (2. * uv - 1.); // centre
    p.x *= iResolution.x / iResolution.y; // correct aspect ratio
    vec2 t = vec2(p.x, p.y)/4.0;
    float light = t.y + .25; // make brighter closer, darker further
    fragColor = vec4(texture(iChannel0, t).rgb / light,
1);
}
```

You should see a gradient of brightness applied to your image. Not a tunnel yet but it’ll get there.

We used multiplication for scaling, centring and aspect-ratio correction. This gets us a texture, with some shading via a simple gradient and a centre to work from that won’t be stretched by the aspect ratio of the canvas. We’re applying a gradient of dark to

light to the image, which is based on a distance from the centre.

Let’s add some simple scrolling of the texture to get it moving on a loop and then a little maths to wrap this texture around a cylindrical shape. We can use the `atan` function to help.

Here’s how the new code now looks all together:

```
void mainImage( out vec4 fragColor, in vec2 fragCoord )
{
    vec2 uv = fragCoord.xy/iResolution.xy; // normalise
    vec2 p = (2. * uv - 1.); // centre
    p.x *= iResolution.x / iResolution.y; // correct aspect ratio
    vec2 t = vec2(atan(p.x, p.y) / 3.1416, 1. / length(p));
    vec2 speed = iTime * vec2(.1, 1); // texture offset / speed
    vec2 scale = vec2(3, 1); // texture scale
    float light = t.y + .25; // make brighter closer, darker further
    fragColor = vec4(texture(iChannel0, t * scale + speed).rgb / light, 1);
}
```

In the `atan` function, we use the angle between the x and y of p, which is our centred UV and then apply the distance p is from the origin, similar to our vignette shader. It might be a bit of maths to wrap your head around but try experimenting with the code and see how easy it is to manipulate the effect.

Challenge: Try experimenting with the scale and speed to get a result you like. Try animating the `t` variable over time to twist the texture. Or try adding the other effects we made on top of this one to enhance the effect.

Use this for a background effect or drop a sprite in front of it and you have a ship flying down a tunnel. Play with the blur and colour and you’ll have something really nice for your next project. ■

Far left A beautiful cinematic vignette effect

Above left A gradient of brightness that will give depth to your tunnel

Above right A finished tunnel animation with aspect ratio correction, scaling and speed



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* WEBFLOW ECOMMERCE

CRAFT CUSTOM ECOMMERCE SITES

John Moore Williams looks at how the upcoming Webflow Ecommerce is set to help designers and devs build truly bespoke online stores

➤ You know what's wrong with ecommerce site design right now? It's that you only have two options to get a store live on the web and that they occupy opposite ends of a spectrum. That spectrum is creativity.

The extremes of the spectrum are occupied by templates and code respectively and as creativity increases, so does the need for coding ability. At one end, you have the template-powered e-store offerings. Your Pattern (by Etsy) sites. Your Squarespaces, Weeblys and Wixes – and, for most, your Shopifys. Easy to set up, easy to launch, easy to sell with. Assuming you can get people to your site.

These options have dramatically lowered the barriers to entry for online commerce. They've made code-free ecommerce a reality. They've also brought to life a host of sites you may remember from your last browsing session.

That's not the worst thing in the world, of course. But as creatives, don't we want something a bit more than that?

Don't we want to create a store that's not only visually distinctive – which of course has its own value – but also stands out because of how well the content (products) and design mesh? How deeply the products inform the design not only visually but also in terms of information architecture, content strategy, taxonomy and more? If people don't buy products but experiences, don't we have to give them an experience?

Enter the other end of the spectrum: the code-heavy solutions. Your Magentos, Yo!Karts, Shopifys (if you're willing to pay hundreds of dollars a month for full design freedom). Here the sky's the limit. As long as you've got a team of developers, an enterprise-scale budget and a design team with the chops to customise them.

And that's all there is. There's no middle ground between code-free-but-boilerplate and code-heavy-but-custom.

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MARKETING... SIMPLIFIED

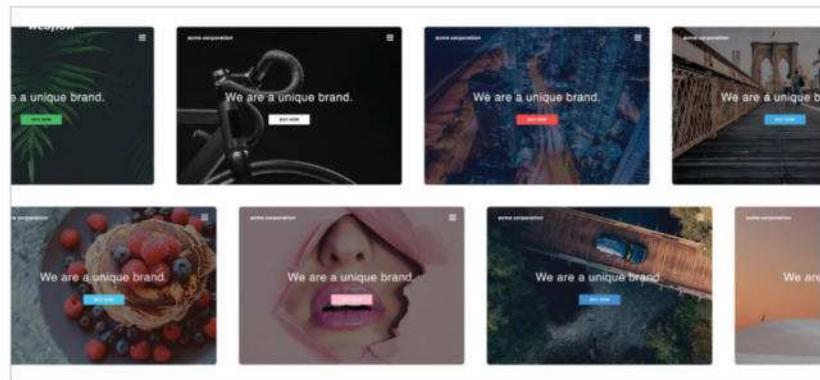
Of course, a beautiful store doesn't mean much if no one's visiting. Which makes Webflow Ecommerce's seamless integration with its CMS even more powerful. You'll have no problem quickly building gorgeous, traffic-driving landing pages, search-optimised content marketing for your products and enticing promotional pages. All of which can be customised and launched by your marketing team, without help from design or dev.

DESIGN IS JUST THE BEGINNING

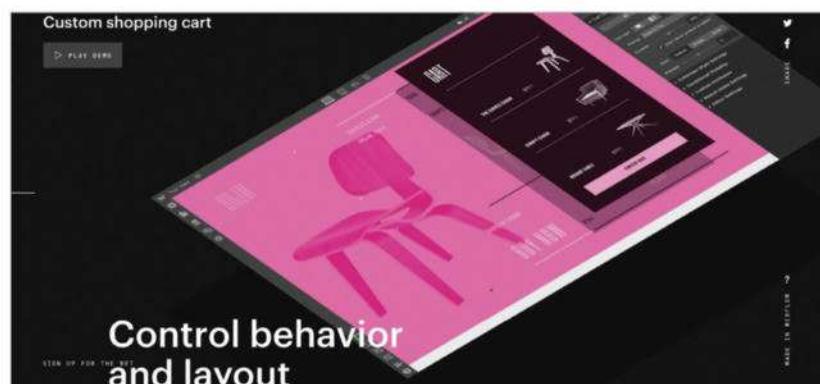
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- Customised shipping options and rates
- Sell products in 130+ currencies (via Stripe)
- Automatic tax calculation and custom rules
- Sell and manage product variations

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Above Template-powered solutions have brought to life a host of sites that may feel familiar



Above Give your customers a bespoke shopping-cart experience that instils confidence



Above With visual control over CSS styles, your design can be as traditional or unexpected as you like



Above It's easy to respond to retail events and alter the design accordingly

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HOSTING PARTNERS

Key hosting directory

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FEATURED HOST



"We have several servers from Netcetera and the network connectivity is top-notch – great uptime and speed is never an issue. We would highly recommend Netcetera"

Suzy Bean

*EXPERT TIP

CLOUD TECH TIP...

If you're going to fully utilise cloud technology, before deciding on a service provider, ask whether monitoring comes as standard and whether management is included in the price. A fully managed cloud can make your business fly; an underutilised cloud will be a waste of money.



Netcetera provides hosting from one of the most energy-efficient datacentres in Europe, all powered by green energy. It offers everything from reliable low-cost hosting for a single site right through to complex cloud racks and managed IT solutions. One of its most popular products is its Managed Cloud, designed to help SMBs get the most from their website, on their own cloud server. Server monitoring comes as standard for Netcetera's Cloud and Dedicated server clients – something it believes should be included in the price of the hosting it provides.

Offering reliable website hosting, dedicated servers, colocation and cloud solutions, Netcetera has a large portfolio of green, zero-carbon solutions for businesses of all sizes. Customers can choose from its fully managed cloud servers, Linux and Windows for SMBs and a fully managed cloud solution for WordPress websites, to help them fully utilise cloud technology without any hassle. And with server monitoring as standard and a full migration service available, Netcetera has made the switch to better hosting really easy.

CONTACT

03330 439780 / SALES@NETCETERA.CO.UK

WWW.NETCETERA.CO.UK

WHAT NETCETERA OFFERS

- **Managed hosting:** a full range of solutions for a cost-effective, reliable, secure host
- **Dedicated servers:** single server through to a full rack, with free set up and a generous bandwidth
- **Cloud hosting:** Linux, Windows, hybrid and private cloud solutions with support and scalability features
- **Data centre co-location:** from quad-core up to smart servers with quick set up, and all fully customisable

1&1 INTERNET

1&1 Internet is a leading hosting provider that enables businesses, developers and IT professionals to succeed online. With a comprehensive range of high-performance and affordable internet products, 1&1 offers everything from simple domain registration to advanced ecommerce packages.

0333 336 5509

WWW.1AND1.CO.UK



The screenshot shows a secure connection with SSL included. It features a blue-themed design with a lock icon and the text "SAFEST OF THE SAFE!" and "SSL INCLUDED". A yellow sidebar highlights security features like 512 Certificate included, Certified data centres, Geo-redundancy, and DDoS protection. A "Find out more" button is visible.

TIDYHOSTS

Tidyhosts boasts a feature-rich selection of services from shared web hosting, WordPress hosting, hosted exchange, virtual servers and streaming. Tidyhosts' passion and drive has gained it a highly reliable and trusted reputation from its customers, making it the number one choice for hosting services.

0560 367 4610

WWW.TIDYHOSTS.COM



The screenshot shows the Hosted Exchange service page. It features a laptop, smartphone, and tablet displaying the exchange interface. Text highlights "CLOUD BUSINESS EMAIL HOSTED EXCHANGE" and "Up to 10 GB storage, Unlimited Domains, SSL Secure, Instant Email, 30 Day Money Back Guarantee". A "GET STARTED NOW" button is visible.

HEART INTERNET

As one of the UK's leading web hosting authorities, Heart Internet focuses on designers, developers and technically adept businesses. It builds on its four tenets – speed, reliability, support and security – to create award-winning solutions for over 500,000 customers.

+44 (0) 330 660 0255

WWW.HEARTINTERNET.UK



The screenshot shows the Heart Internet homepage. It features a search bar, navigation links for Domain Names, Web Hosting, Reseller Hosting, Servers, Marketing Tools, and More. Below the navigation is a banner with the text "Your websites deserve great web hosting".

THENAMES

TheNames.co.uk offers great value cPanel web hosting, SSL certificates, business email, WordPress hosting, Cloud, VPS and dedicated servers. Part of a hosting brand that started in 1999, it is well established, UK-based, independent and its mission is simple: ensure your web presence "just works".

0370 321 2027

WWW.THENAMES.CO.UK



The screenshot shows the TheNames website. It features a header with the logo and navigation links for HOME, DOMAINS, WEBSITES, HOSTING, CLOUD, EMAIL, SECURITY, and COMBO OFFERS. Below the header is a section titled "Get your Domain Name" with the subtext "Create your Online Identity in Moments". A search bar for "YourWebsite.co.uk" and a green "GO" button are also visible.

CATALYST2

As one of the UK's most experienced hosting companies, Catalyst2 has built a stable, reliable and well-supported hosting platform for organisations across the UK. Catalyst2 specialises in very high-availability hosting and exceptional customer support. Contact the team today for a quote.

0800 107 7979

SALES@CATALYST2.COM



The screenshot shows the catalyst2 website. It features a header with the logo and navigation links for Home, Web Hosting, Dedicated Servers, Email Hosting, About Us, Support, and Login. Below the header is a promotional section with the text "We will provide a service that is worry free giving you complete peace of mind" and a "GET IN TOUCH!" button. An image of a laptop with a "Z" on its screen is also shown.

ADVERTISE HERE!

Would you like to promote your hosting business and services to our audience of professional web designers and developers? If so, please call or email Chris as below.

REASONS TO ADVERTISE

- **Reach professionals:** 75% of readers are working in or seeking work in the web industry
- **Variety of projects:** future projects include mobile apps, web apps and CMS-driven sites
- **Home workers:** 51% have a personal website under development

CONTACT

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★ ACCESSIBILITY

ENSHRINING ACCESSIBILITY AT EVERY LEVEL

Michiel Bijl explains why every team should have an accessibility specialist: one per company isn't enough

When I started to learn HTML, I began with basic elements like h1, p, div and button. I learned about semantics, creating sections with headings and styling elements with CSS. Unconsciously, I was laying a foundation of knowledge on how to build accessible websites.

In 2014 – eight years in as a front-end developer – I attended a talk by Heydon Pickering in which he mentioned accessibility. This is when I realised semantics play an important role in accessibility. Before that, I'd only written semantic HTML because that's what I'd learned to do. Looking back, I realise it shouldn't have taken eight years before I learned about something as important as accessibility.

In those eight years, I read a lot of articles about various web-related topics. I don't remember accessibility being a prominent part of those articles. This is something that most certainly has improved since then – a lot of articles now explicitly mention accessibility. That's so cool!

We all play our part in the accessibility of content. So we should all have some accessibility knowledge that relates to our part of the puzzle. From media

managers that make sure videos have subtitles to developers that know when to use ARIA and when not to. This also includes the people in charge of projects, such as product owners, department heads and CEOs. These are the people that actually have the power to make accessibility a project requirement and establish it as a goal that everyone has to work towards.

It's difficult to be the only person who fights for accessibility. And we shouldn't have to fight. The reason that we have to is that our superiors either don't know about accessibility or don't care about it. If only one person fights for accessibility, it'll remain a personal thing – it won't become a part of a company's design process. On top of that, there are a lot of different aspects to accessibility and you cannot expect one person to know all the ins and outs. One specialist per company isn't enough to create an accessible product.

Every member of the team should be fully behind accessibility, the same way that the team should be fully behind delivering a quality product. After all, accessibility is a big part of the quality of your site. ■

PROFILE
Michiel has written for the web since the turn of the century and is an editor of the W3C WAI-ARIA Authoring Practices. Follow them @MichielBijl

(mt)

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Media Temple web hosting delivers premium performance and support so that creative professionals and enterprises can focus on bold ideas, not web servers.

mediatemple.net

Whatever your passion



build it

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Form a platform, community, business,
or try something new with your website.

This is the time to build that idea into a reality.

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