

CODE EDITORS

Pick the best one and
boost your workflow

CYBERSECURITY

How we can keep the
internet open and safe

FIREFOX QUANTUM

Behind the scenes of
Mozilla's biggest update

PROTOTYPING

Create an animated
prototype with Principle

The voice of **web design**

net

Issue 303 : March 2018 : net.creativebloq.com

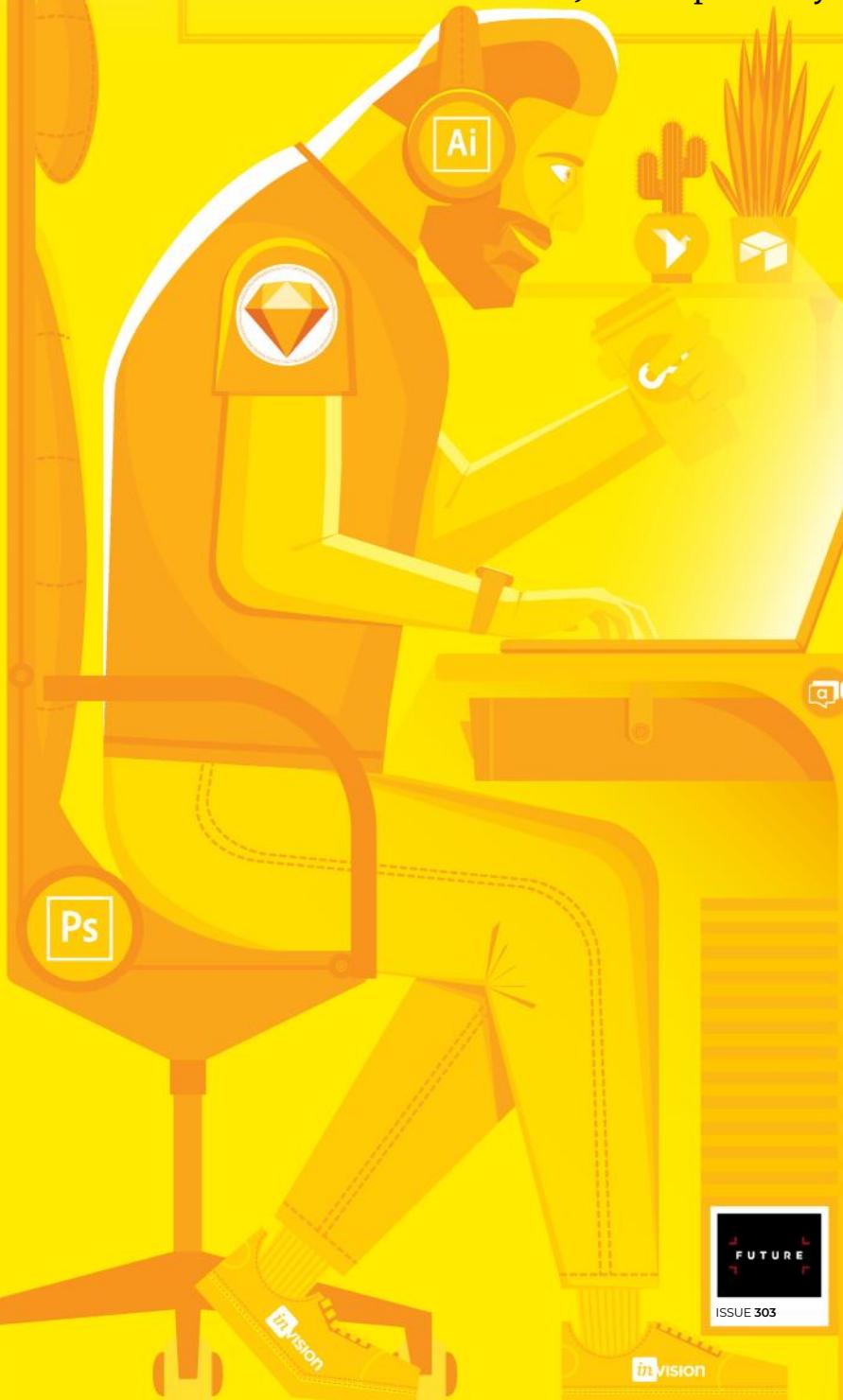
THE COMPLETE DESIGN TOOLKIT

THE PRO'S GUIDE TO THE BEST
TOOLS IN WEB AND UI DESIGN

*JAVASCRIPT

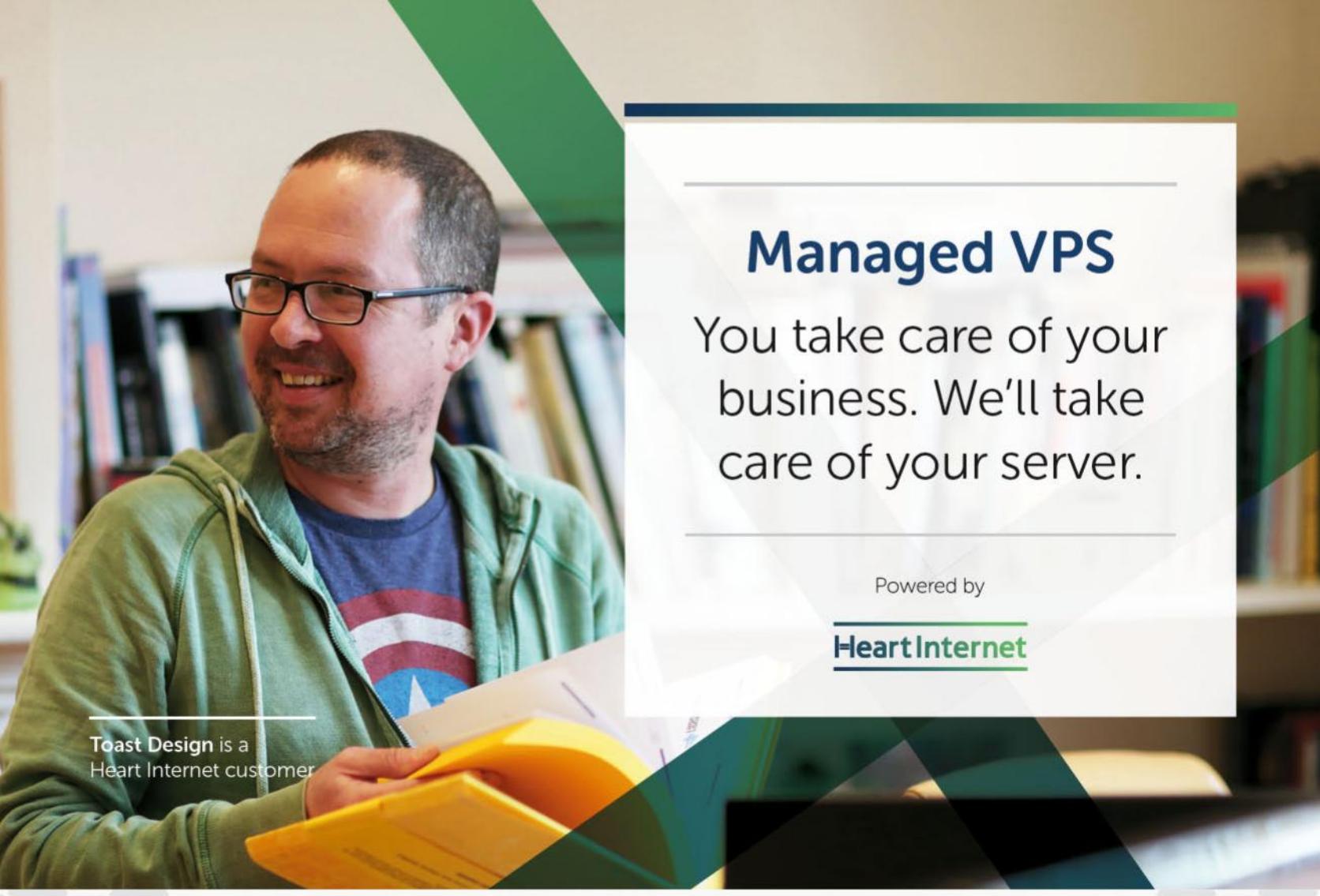
10 EXPERT REACTJS TIPS

Build efficient and flexible user interfaces
with the number one JavaScript library



FUTURE

ISSUE 303



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★ WELCOME

EDITOR'S NOTE

> Long gone are the days when a web designer's toolkit consisted of just Photoshop, Fireworks and Dreamweaver. Adobe's monopoly actually made it pretty difficult to be creative on the web, but that all changed in 2010 when Sketch first became available. Today it needs no introduction. It's simplified the way we work and has millions of users across the web design community.

One of Sketch's big impacts is in the proliferation of software that has followed in its footsteps. There are now tools to improve every aspect of product design and team communication. But just where do you start, and what exactly should you be using? This issue, Rachael Grocott explores – in detail – the best

tools available to designers today, and shows you exactly how they can improve your workflow and, ultimately, help you create better products in 2018.

Our second feature takes an expert look at the web's most popular JavaScript framework, React. Developer Matt Crouch reveals 10 tips to ensure you're making the most of it. Elsewhere, Mozilla gives us a guided tour of the changes it made in Firefox Quantum, while we've got a look at new cybersecurity threats and explain exactly what Blockchain is and why it's going to be big news. Our Project section is headlined by a brilliant guide to animated prototypes in Principle, too.

Enjoy the issue!

FEATURED AUTHORS

RACHAEL GROCOTT



When it comes to web and UI design, it's a real software maze out there. Rachael, product designer at UVD, shows you the complete design toolkit on page 60.

w: dribbble.com/rachaelgrocott
t: @rachaelgrocott

MATT CROUCH



Matt is a front-end wizard, building experiences across devices using a variety of tools. On page 68 he reveals 10 expert tips for the web's most popular framework, ReactJS.

w: mattcrouch.net
t: @mattcrouchuk

JOSHUA GARITY



The founder of award-winning UX creative agency Candorem, Joshua rounds up his favourite new sites in this month's Gallery. Turn to page 40 for a stunning collection.

w: candorem.com
t: @iamlucid

ANA TRAVAS



Ana created her own CSS animation library, Animista, and on page 92 she shows you how to use, tweak and download on-demand motion with it.

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t: @ana108



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It's the foundation for teamwork

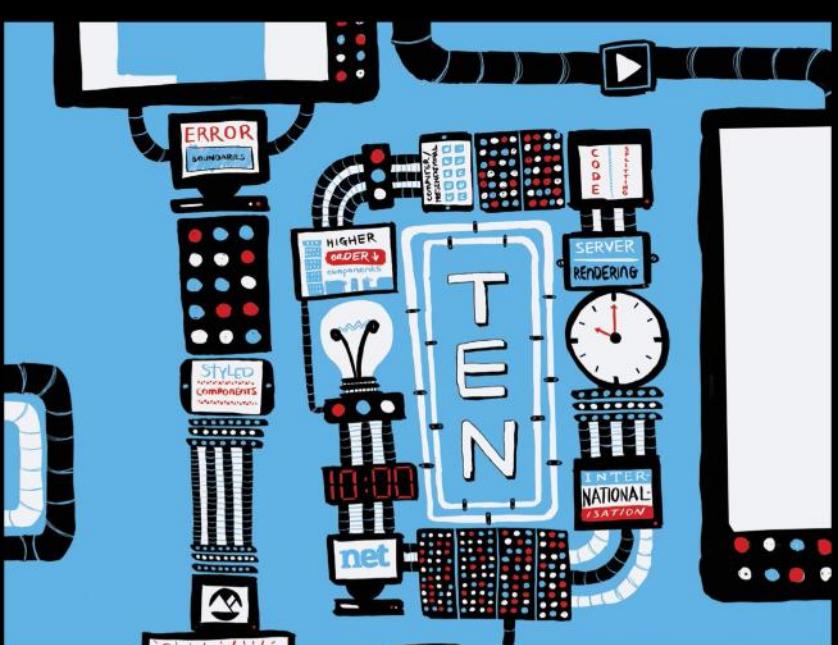
Slack creates alignment and shared understanding across your team, making you more productive, less stressed, and just a little bit happier.



*REGULAR

GALLERY 40

> Joshua Garity runs down his favourite websites of the month, including a brilliant accessibility offering from Uber Sign Language



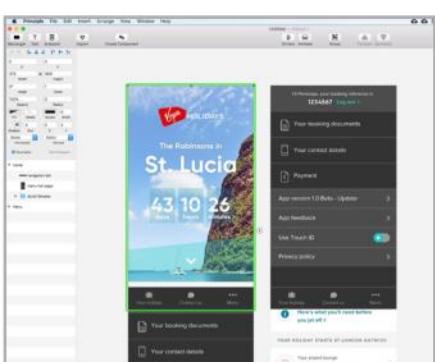
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EXCHANGE

Send your questions to netmag@futurenet.com

Practical
advice from
industry experts

THIS MONTH FEATURING...

PATRICK H LAUKE



Patrick H Lauke is a senior accessibility engineer at The Paciello Group. He's also co-editor of the W3C Pointer Events Level 2 and the W3C Touch Events Level 2 specifications.

ADA ROSE CANNON



Until recently known as Rose Edwards, Ada is a JavaScript developer specialising in front-end web performance and real time graphics, including 3D. She is currently working as a developer advocate for Samsung.

w: ada.is
t: @Lady_Ada_King

★ QUESTION OF THE MONTH

How fragmented is the current state of WebVR?

Mary Watkins, Salisbury, UK



Last year, Mozilla brought forth the WebXR API proposal for access to augmented and virtual reality devices

ARC: The beauty of WebVR is that you write it once and it works everywhere. The goal of the WebVR standard is to hide differences in hardware. The standard is being developed in public by the Immersive Web community group. Due to the new scope of augmented reality and mixed reality, the standard is now called the WebXR Device API. You can find the GitHub page here: <https://github.com/immersive-web/webxr>. There is also a great WebVR polyfill. This means that on browsers which don't yet support the API, your VR experience will work using cardboard headsets. There are some challenges presented by the capabilities of different hardware, though. There are many controller types: games console type controllers; rotation tracked controllers like the Samsung GearVR or Google Day Dream; and fully position and rotation tracked controllers like HTC Vive and Oculus Touch. Having an optimal experience that works under all situations is a challenging problem to solve.

ACCESSIBILITY

MAPPING OUT

How do I make my web maps accessible?

J Edgar Montes, Michigan, USA

PL: Maps can be some of the trickiest components to make fully accessible. It's important to first understand what purpose a map serves in each specific situation. They may be static or highly interactive. In the simplest case, a

map is used as little more than a way to visually represent a single address or location. At the other end of the complexity scale, a map may present a large number of different locations or points of interest, and convey not only their specific location, but also their spatial relationship – how close certain markers are to each other, what paths are available between them, etc. The

Inclusive Components

A blog trying to be a pattern library. All about designing inclusive web interfaces, piece by piece.



Heydon Pickering's Inclusive Components site is a useful resource, halfway between a blog and a pattern library for inclusive design

latter can be very challenging to make understandable to users who may not be able to visually perceive the map.

Of course, accessibility is not solely about the mythical 'screen reader user' but covers a wide range of different users. So a first step would be to ensure that the map can be used by sighted keyboard users. Make sure users can navigate to any location markers (ie that markers can be 'tabbed' to), as well as being able to navigate the map itself (panning, zooming). Choose colour combinations that provide sufficient visual contrast. Then, on a more fundamental level, understand what the purpose of the map is. This is particularly important if the map conveys spatial relationship, which can be complex to convey as part of the map itself to an assistive technology user. In this case, consider offering an alternative (such as a simple text description, or a list of locations/steps) that serves the same purpose.

HSL

TEMPORARILY ABLED

When ageing affects your ability to determine content due to the contrast, can you switch to a more extreme setting?

James Murdoch, Surbiton, UK

ARC: As a user, there are some tools we can use to help us. Some browsers offer a high-contrast mode or have extensions to manage this. Other users may make use of custom styles

to override typefaces, font sizes and font colours. Assistive tools such as magnifiers and screen readers are also popular tools. As the people building the web, it is important to make it work for everyone and to bear in mind that the user may override our sites' style to make it work for them. After all, we are all just temporarily abled: everyone at some point will need to make use of assistive technology (netm.ag/303-temporarily-abled).

ACCESSIBILITY

STAYING INFORMED

There's a lot to keep up with when it comes to accessibility: how do you make sure you don't miss a new development/best practice/technology?

Bonnie Arthur, Quebec, Canada

PL: Compared to other areas of web development, I would say that accessibility moves at a slightly slower pace. The fundamental practices haven't changed much over the years, though it's true that techniques do get refined, and certain approaches become more viable as browser/assistive technology support improves. I'd recommend sites like Heydon Pickering's Inclusive Components (<https://inclusive-components.design>) and TPG's blog (<https://developer.paciellogroup.com/blog>). For the brave, official resources like the recently finalised WAI-ARIA Authoring Practices 1.1 (www.w3.org/TR/wai-aria-practices-1.1) are great.



3 SIMPLE STEPS

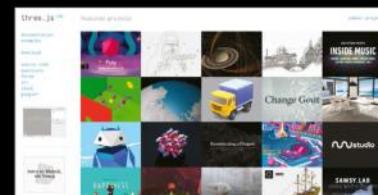
Is there a recommended 'starter kit' of technologies I should learn to make WebVR?

Joe Parsons-Dorman, Bristol



A-Frame

+ ARC: WebVR is at its core based on WebGL, so any experience with graphics libraries is a big help. If you are a beginner to working with graphics, the place I'd recommend starting at is A-Frame (<https://aframe.io>).



How it works

+ A-Frame enables the developer to declaratively describe their scene using only HTML. It works by wrapping the popular three.js library with custom web components. With a few lines of HTML you can make a ready-to-go VR application that works cross platform.

Going further

+ Once you are comfortable with A-Frame, you may find that you want more than what comes in the box. One option is to learn how to use three.js so you can extend A-Frame by writing your own components. Or if you prefer to use JavaScript to write your VR app, a library like Babylon.js or React VR is a great next step.

COOL STUFF WE LEARNED THIS MONTH

THE RISE OF TECH ETHICS

+ This article by Rachel Coldicutt is a great summary of what might be termed the rise of ethics in technology; even some of the people who built behemoths such as Facebook and Google are starting to be horrified by the consequences for democracy, privacy and society in general. netmag/303-moral-design

MAKING YOUR WEB APP WORK OFFLINE

+ "Getting a web application to do something while offline is surprisingly tricky," says Adam Rackis in this two-part series on getting to grips with offline web development. It's a very accessible introduction to a technique that will improve your applications when using a flaky connection. netmag/303-offline

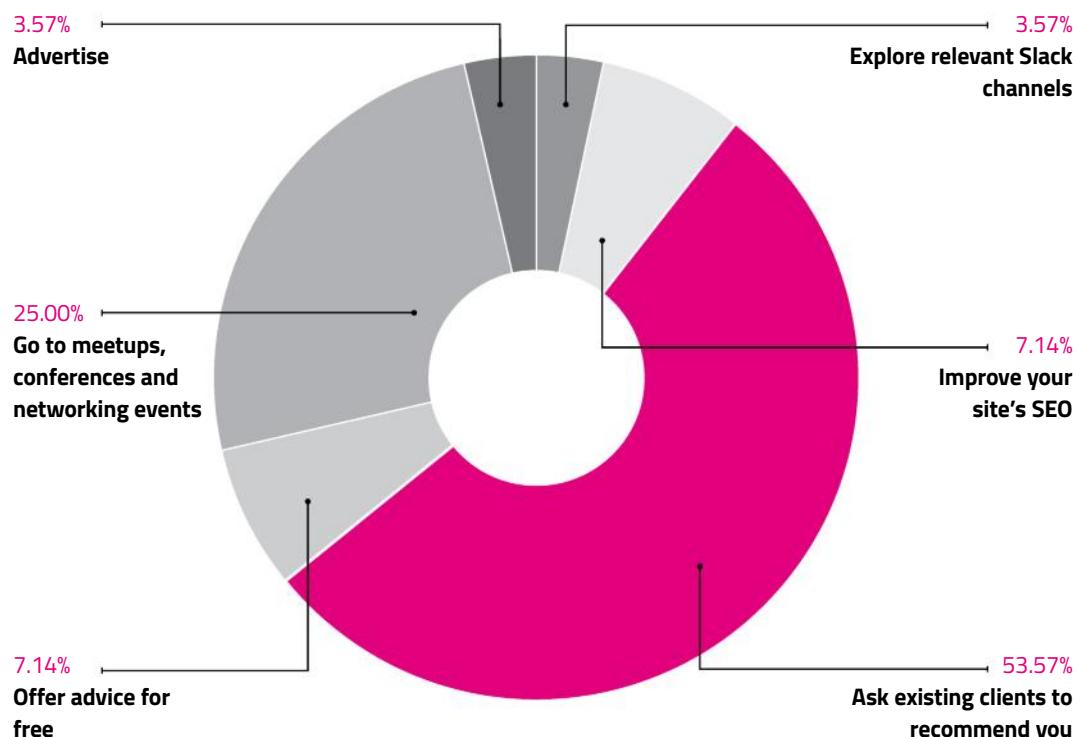
THE FUTURE OF WEB

TYPOGRAPHY AND LAYOUT

+ Eye-tracking software shows most online reading isn't reading at all; it's scanning. This fascinating conversation between Jen Simmons, Jeffrey Zeldman and publication designer Roger Black explores how typography and layout can improve the experience of reading on the web. netmag/303-typography

*THE POLL

WHAT'S THE BEST WAY TO FIND NEW CLIENTS?



From our timeline

What do you miss most about the early days of web design?



Epic Flash monstrosities! Remember 2Advanced?!

:) The freedom and Wild West feeling... wipes away a tear.

#nostalgia

@maxray



2advanced Studios... I shouldn't have to say any more than that.

@Courantesiii



That UI patterns and trends weren't governed by big

companies. Like a small child's drawings; beautifully composed because it was created from the imagination without someone saying it doesn't follow the rules.

@Smokyblue247

 when there were only 2 browsers, and you could easily confirm your design works on all of them!!!

@rudydotca



It was about people, not business. People made websites about

themselves and their interests and weren't trying to sell you stuff. Individuality and creativity flowed everywhere. We unapologetically made beautiful tripe with crap code.

@mikkeldunby



How early websites were fully accessible for people with disabilities, were so quick to download, would work on *any* device.

@jcravens42



Being able to go back to a project after two years without risk of half the npm packages being deprecated and the task runner being redundant. [@1976Ltd](#)

FEED

People, projects & paraphernalia

THIS MONTH FEATURING...



SIDE PROJECT OF THE MONTH

Ade-Lee Adebiyi explains the inspiration behind make it pop, the card game for creatives

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CLIENTS FROM HELL

This month's Clients from Hell features a criminal and a vast stash of stolen cars

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BEYOND PIXELS

Jon Aizlewood on why he sees web design and mountain biking as the perfect coupling

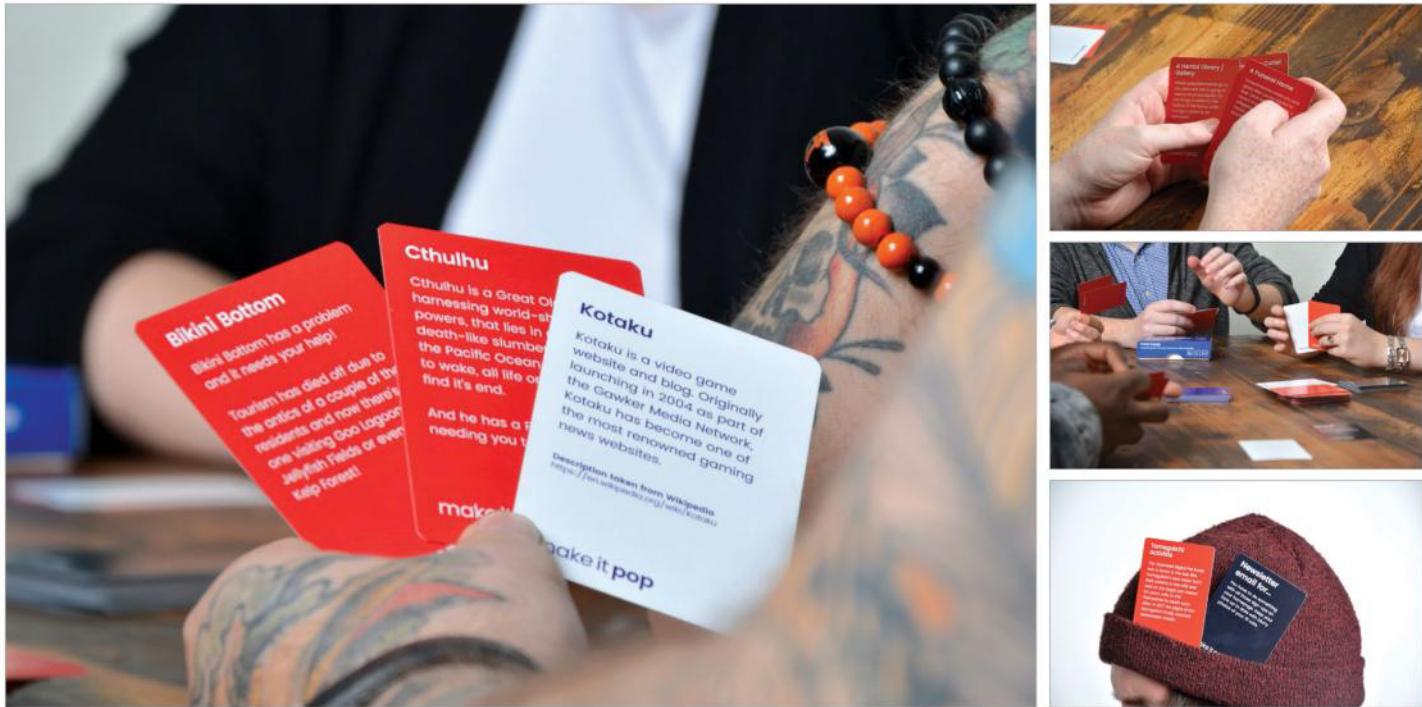
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WORKSPACE

Simon Owen reveals how *Star Wars*, Apple and constellations help keep him inspired and productive

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MAKE IT POP

Ade-Lee Adebiyi explains the inspiration behind make it pop, the card game for creatives

* SIDE PROJECT OF THE MONTH



INFO

**ADE-LEE
ADEBIYI**

job: UX/UI designer
w: makeitpopgame.com



Make it pop looks like a lot of fun...

make it pop (mip) is meant to be fun! We think that designers can sometimes take themselves too seriously (we certainly do), and we wanted to make a game that was not only educational, but also poked fun at ourselves. It's a game for creative people to expand their design horizons and take on varied tasks; either pitching their ideas to teammates, buffing their practical skills and designing challenges or even just finding funny task/client combos.

How exactly does the game work?

The core of mip is combining task and client cards to build a creative challenge with a team, friends or just playing solo. It comes with task cards (everything from homepages to T-shirts), civil client cards (such as Reddit, Lush...), crazy client cards (fun and ridiculous clients, such as Your Mom's Modelling Site or just a Mexican drug cartel going legit) and mixer cards, which exist to motivate, antagonise and demotivate! There are three ways to play mip - pitch it, design it, and play it; that all starts with one person drawing a task card, and the others drawing civil and

crazy client cards, who then select from their hand a favourite client for the task. The task holder is then able to choose from the clients offered to them.

They read the task and client cards combined, such as "Design a T-shirt for Fidget Spinner Magicians" and depending on the gameplay, either pitch it, where they describe their ideas; design it, where they create a mockup; or play it, where they choose the best/funniest/weirdest combo and award a point to the person who submitted it. The winner keeps the task card and draws a new one. The first to 3 points wins!

What's the inspiration behind make it pop?

mip started when we were whining over Malaysian food about our worst clients, and thought "who would be the worst client to design for?" As you can see, our imaginations went running with offensive and ridiculous clients. When it comes to the game's cards, in particular its demotivation cards, it draws from our experiences as designers; those nightmare clients or inhuman demands.

We hear 10% of your earnings will go to charity?

Yeah, we really understand that everyone out there deserves a chance to shine and more so than a lot of career paths, arts and design can be harder to break into due to the high demands of education, experience, hardware and software that it takes to get started. Some mip'ets had a tough upbringing where opportunities were slim, but when we did receive one, it launched us to where we are today. ■



FAST AND FURIOUS

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

* CLIENTS FROM HELL

> I landed a pretty big job with a client who ran an automotive business. The whole branding package and then some. I thought I'd died and gone to heaven.

Even better, the client was easy to work with. They knew everything they wanted and needed, and offered me a perfect mix of freedom and constraints to make what they wanted. And they managed the 'keep in touch but don't bug me too often' ratio I liked. He paid my deposit up front without any hassles.

During this period, my car was stolen, and whenever I met the client they'd send one of their employees in a high-end car to pick me up. Mustang one day, town car the next – even a Hummer once. Total dream job.

At the end of the process, I passed on the finished work and they were ecstatic.

Client: Thank you so much for all the hard work. It looks fantastic, and I couldn't be happier.

A week later, and a full three weeks before my payment was due, I woke up to a knock at the door. There was no one there, but in my drive was a brand new Dodge Challenger. There was a note on the windshield:

Client: My friend – I regret that I cannot pay you like we agreed. Please accept this car to replace the one that was taken from you!

I was gobsmacked. I decided to mull on it for a day or two, then ultimately went to visit the client at his store... only to find the place swarming with police officers. It turns out the car was stolen, and my client had been arrested for stealing and selling cars.

No, I don't know if he stole my original car. But he definitely might have.

**CLIENTS
FROM HELL**
clientsfromhell.net



* HOW TO

SUCCEED AT PUBLIC SPEAKING

We asked the @netmag followers for advice on pitching to clients, presenting ideas to a room and speaking at conferences.

WHY IS THIS USEFUL?

@brad_frost shared this superb post about speaking (<http://bradfrost.com/blog/post/on-speaking>) in which he says it's important to explain why your information is useful. "Tell success stories. Tell horror stories. Give real world examples of the techniques you demonstrate." Similar advice is echoed in this post: netmag/303-best-presentation from @jboogie.

GET THE TECH RIGHT

"We've been rescued numerous times at pitches by taking a USB monitor with us. Never assume that the customer will have a display to use," says @dave_woods. "Always bring a variety of adapters to connect your laptop," warns @ShawnHooper.

@brad_frost agrees you should always insist on performing a tech check before you start.

DON'T LIVE CODE

There are so many ways this can go wrong, so just don't do it. Ditto for working in the command line, which @brad_frost describes as "absolutely insufferable".

@aganaplocha recommends an alternative: "I tend to record the screen from the code editor and just comment what's happening to the audience".



STUFF I LIKE



MAX SAUNDERS

Designer
at Mud

<http://ournameismud.co.uk>

SIZZY

There's a variety of well-trodden paths to test your responsive designs, but recently I've enjoyed using Sizzy. A simple web app that lets you view your site across a selection of browser sizes in one go, it's a handy tool to pick up on any subtle changes.

<https://sizzy.co>

MUZLI

Staying up to date with blogs, news outlets and portfolio platforms is a tough ask. Muzli is a toolbar extension that curates the best inspiration on the web into a daily feed. It replaces Chrome's most visited sites with a customisable grid.

www.muz.li

NOUN PROJECT APP

Since it launched I've used Noun Project regularly, and have watched it grow into a vast library of quality icons.

The app has integrated seamlessly into my workflow, with simple export options and the ability to drag icons directly into apps.

<https://thenounproject.com>

MOUNTAIN BIKING

Jon Aizlewood on why he sees web design and mountain biking as the perfect coupling

*BEYOND PIXELS

> It's late spring. Sunlight dapples through the trees and there's deep blue sky overhead. In front of me the twisting, winding singletrack is barely visible beneath the leaf litter from the winter. All around me bluebells are blooming, covering the forest floor in a carpet of violet and blue. I hear nothing from the city, just the wind through the trees and the birds overhead. As I pick my line I tighten my grip and twist, turn and finesse my way through the seemingly unending singletrack. All the while I can't wipe the huge grin off my face. I bloody love mountain biking.

There's a reason why a friend of mine once called it "the new golf". In the past few years I've seen droves of digital workers step away from their screens and throw their legs over a saddle as mountain biking has quickly become their favourite pastime. And it's easy to see why: all you need is an adventurous spirit, a bit of adrenalin (and a bike). Here in the UK we're blessed with great terrain packed into a small island, meaning we're never too far away from a great ride. In my particular case I'm lucky enough to have the South Downs on my doorstep. The Downs offer breathtaking vistas, superb trails, and enough climbing to make me forget everything back in the office as my chest heaves

and my legs burn. Time and time again I've learned that recharging away from my screen produces better results on it.

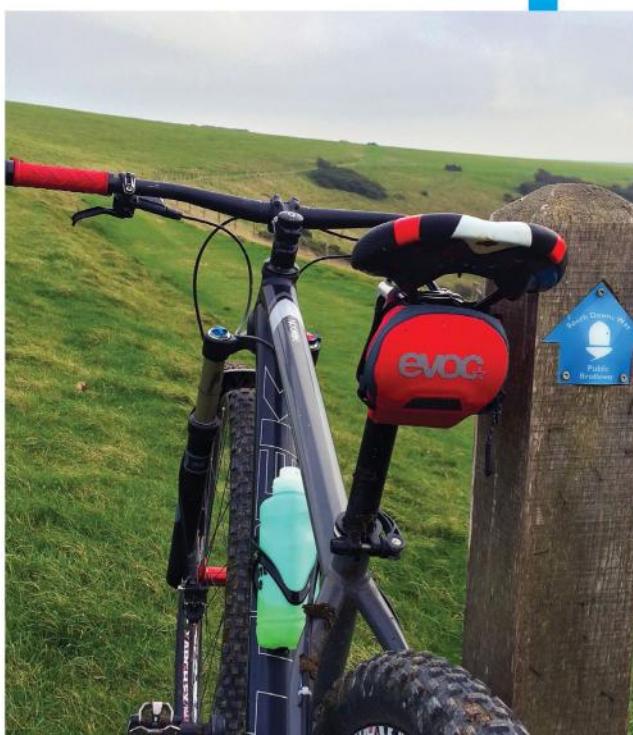
As a digital designer, there are a lot of parallels between mountain biking and the work we do on the web. Just like our own, the mountain biking industry is innovating and changing at lightning speed. It's always introducing new acronyms and technologies that would make the latest design system or JS framework blush. What's more, the marriage of form and function is evident everywhere you look: from the clean lines of an all-steel hardtail, to the all-mountain full suspension enduro, or the gazelle-like elegance of an XC carbon racer. Then there's the paint jobs, the livery, the rapid proliferation in tyre sizes and widths... oddly it all seems a perfect bedfellow with our increasingly complex web world.

If you appreciate good design, exercise and a healthy lifestyle, it's a match made in heaven. Give it a go, you won't be disappointed. ■

* PROFILE



Jon is a senior designer at Clearleft, where he works with clients such as Penguin, Pearson, Time Inc, and many more.



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SIMON OWEN

Simon reveals how Star Wars, Apple and constellations help keep his workspace inspired and productive

* WORKSPACE

Many years ago my parents would bring me to Marple for a day out. I'd play on the space rocket climbing frame and we'd have nice walks along the canal. Marple is about 20 minutes from Manchester by train. Twenty minutes in the other direction and you're in Edale, one of my favourite walks in the UK. I actually wrote a previous article mentioning digiHike, a hiking group for geeks I run. It's on my site if you want to check it out (<https://s10wen.com/blog/2017/01/30/dighike>).

Fast-forward 30 years and I'm now living in Marple. It has a quaint little cinema, plenty of places for food and drinks, a

climbing centre, kayaking, it's awesome! However please don't tell anyone else, we don't want it becoming too popular and overcrowded now do we? It's also nice that co-founder/organiser of UpFront Conf, Dan Donald, lives just around the corner.

At the start of the year I went freelance and day to day I'm working from my home studio. Those of you who already know me, know I'm a *Star Wars* fan. So who better to look for guidance when working than (1) Master Yoda himself. As well as *Star Wars*, I'm an Apple lover. My trusty (2) MacBook Air I bought in 2013 remains one of the best purchases I ever made.

When deciding on equipment for my studio, a stand up desk was a must have. I went for the (3) IKEA Bekant as you can adjust the height. When I need to concentrate I go into what I call 'Deep concentration lock down mode' and mitigate any distractions. One way to help with this is by using my (4) Parrot Zik 3.0 noise cancelling headphones. I recently had a very productive writing stint on a train riding to and from Manchester while wearing them. On the wall (5) hangs a present from my fiancée. The artwork shows the star constellations at the time and location where I proposed, the lovely Plitvice Lakes in Croatia. If things get tough and busy with work, this will inspire me to go that extra mile. ■

Simon is a freelance front-end developer and currently taking on new work. Read more about how he can help you at <https://s10wen.com>.

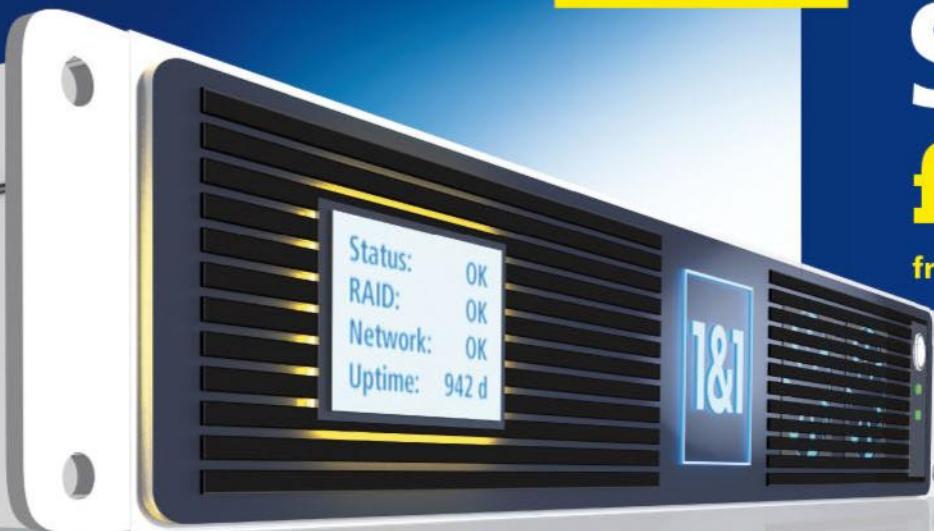
* PROFILE

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Simon Yeoman explores the new ways hackers are getting your data, and how best to boost your cybersecurity



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★ PHOTON

REBUILDING THE FIREFOX USER EXPERIENCE

Madhava Enros explains how Mozilla approached improving the Firefox UX



More than a year ago, the Firefox product team placed a bold bet on Quantum, with a plan to completely revamp the browser. The initial impetus for Quantum was an engineering moonshot to make the Firefox engine fast again – optimising some parts and replacing others with new technology based on a newly invented programming language. In the end, the entire browser, including the front end, became fair game for change.

At Mozilla, we know a lot about browsers, and we also have a lot of knowledge when it comes to browsing. Our UX team, including a core group of user researchers, conducts research to learn how people use technology to work, learn, and connect with others. This

research, as well as our own design exploration, enabled us to approach this project as a holistic redesign.

DESIGNED FOR PERFORMANCE

We started our work with the idea that performance has been noticed to be real. We knew we could show technical improvements on a stopwatch, but wanted to be sure our users could feel those improvements. So we conducted research to understand how users perceived browser performance: which page elements or behaviours contributed to a user's experience of speed, smoothness, and responsiveness.

We saw during research that users' perceptions were shaped in large part by the responsiveness and smoothness of key browsing behaviours, like starting the browser, opening tabs, and switching between tabs. We worked with our engineering team to improve the speed and remove 'jank', or lags and stutters, in these interactions.

We animated key events (like hovering over a tab) using an animation curve that begins quickly and slows as it completes. This gives users immediate feedback that an interaction has registered, while also smoothing the interaction as it ends. We also removed animations that appeared to slow the experience, like slow-fading hover effects on toolbar buttons.

STRUCTURE

Other major changes relied less on technical improvements and more on making tools easier to find and understand. We created a page action menu in the address bar that contains page-specific tools like 'Bookmark This Page' or 'Take a Screenshot'. We also added a Library button in the main toolbar, to give a single point of access to all of a user's work: bookmarks, history, downloads, and other saved content.

CONTENT

As we rebuilt the structure, we revamped copy. Our focus was on clarity, brevity, and consistency, with a bit of personality where warranted. We simplified much of



the copy in the browser – in the preferences, in our privacy notice, and during the onboarding experience – to help users complete tasks with minimal interruption. We also introduced illustration in select error messages, onboarding, and at other points where it could aid comprehension.

VISUAL DESIGN

We knew we would need to create a unique identity that signalled the underlying performance changes, so we revamped all visual elements of the browser, from logo and icons to tabs and menus. The resulting design is fresh and modern, with a bold colour palette and crisp angles, to live more seamlessly within the native operating systems.

CONNECTED DEVICES

While our initial efforts focused on our flagship desktop browser, we extended the design system to Firefox for mobile to deliver a coherent experience across devices. Firefox for Android and iOS and Firefox Focus for Android and iOS reflect

many of the visual and structural patterns and perform as an extension of the desktop, but optimised for mobile. We borrowed the concept of page actions from desktop, with an interaction suited to one-handed mobile browsing. We streamlined the splash screen animation on iOS and removed it entirely from Android to help people start browsing faster. We also gave users the ability to send tabs from one device to another via our Sync feature, to better bridge desktop and mobile experiences.

Our goal is to create products that work like a set of tools from the same toolbox, in how they look and in how they perform. The Photon project presented an opportunity to deliver the changes that had the most impact on users' experience of performance. We've just released the new browser into the world, but already see a change in how people perceive Mozilla and Firefox products. ■

*** PROFILE** Madhava leads the Firefox UX team. He lives in Toronto where he is an influential member of the city's Indo-Finno-Franco-Canadian community.



★ SECURITY

THE HUMAN ELEMENT

Illustration by Kym Winters

Simon Yeoman explores the new ways hackers are getting data, and how best to boost your company's cybersecurity

> The internet has changed the world, that much is undeniable, and mostly for the better by inspiring communication, innovation and collaboration. However, as is the case with any technology, there are both pros and cons to using it.

While it is true that attackers are developing more complex viruses and malware all the time, increasingly and often forgotten, the biggest security threat to businesses does not actually come from software, but from human beings themselves. Companies can build the most secure infrastructure in the world to protect their data from external threats, with solutions such as firewalls, VPNs and secure gateways, but that doesn't mitigate the risk of threats, malicious or otherwise, from within the organisation itself. This low-tech way of hacking has become increasingly popular in recent years, with well-known brands falling victim to fraudsters contacting junior finance administrators requesting funds after doing a little LinkedIn investigating.

Additionally, with the internet forming so much of most people's daily routine, and many employees logging into personal accounts at the workplace, it's important to remember that there is also a crossover between personal details and your business information when it comes to online safety. If a hacker obtains your personal details, they can access your professional ones too, and both could be easy to get by 'shoulder surfing' (which I'll explain in more detail further on).

SOCIAL ENGINEERING

The genesis of any human-led cyber security threat is social engineering; the act of manipulating confidential data from an individual. Sure, hackers could infect a network with malware and go in through the back door, or better still, they could just trick an employee into giving out a password and stroll right in through the

front without raising any alarm bells. Once a hacker has an individual's password, there is little you can do to stop them, since their activity will appear to be authorised.

Social engineering techniques have had to become more sophisticated over the years as the average user has become savvier to the traditional methods hackers use. So hackers are now having to be smarter in the ways that they obtain data. In a business sense, something as simple as tricking a user into clicking a malicious link can give the attacker access to the entire network. People know to ignore emails from pleading strangers who are in desperate need of bank details, but when that email comes from someone you know, you are much less likely to click 'Mark as spam'.

Hackers can easily scroll through a potential target's Facebook account to find the name of a friend of the victim. Then they can send the victim an email pretending to be that friend, and the victim will be more likely to fall for it if they think it's come from someone they know.

TIP: On the topic of social media, be careful with the personal details that you give out. What may seem like a harmless game where 'Your rap name is the name of your first pet plus your mother's maiden name' could actually be a phishing scam used to find out the answers to common account recovery questions.

THE LOW-TECH INTERNAL THREAT

Instead of a faceless enemy, most internal cyber security threats actually come from current or ex-employees. These employees can gain unauthorised access to confidential data, or infect the network with something malicious. These internal threats can take many forms:

Shoulder surfing

'Shoulder surfing' is the simple act of one person observing someone typing their password. There is

- precedent of this happening. A disgruntled or soon-to-be-leaving employee could casually stand behind a desk and observe other employees typing their passwords. This simple act might lead to unauthorised access, which could be disastrous to a business.

Passwords on Post-it notes

Even easier than memorising a password observed over a shoulder, internal threats can come from employees writing down passwords and sticking them to their computer monitors – yes, that actually happens. Obviously this makes it incredibly easy for someone to obtain login details that could then be used to defraud or infect a company. The good news is that this carelessness is easy to rectify.

Thumb drives inserted into computers

Employee machines can be infected with keylogging software loaded onto a simple USB drive. An attacker would just have to sneak the USB drive into the back of

not the most recent episode of *Game of Thrones*. Similarly, with so much information listed publicly on LinkedIn, it can also be easy for attackers to research a reporting structure, target a junior pretending to be the CEO and request a transfer of funds to a particular account. As farfetched as that may seem, there are well known incidents of this taking place. Eavesdropping is a similar method, with attackers listening to business conversations in coffee shops, on public transport and even as a supplier in an office environment.

UNSUBSCRIBE BUTTONS

Another way attackers are tricking users into downloading malware from emails is through unsubscribe buttons. By law, every marketing email must contain an unsubscribe link so that consumers can opt out of receiving communications. An attacker could send repeated emails to a user that look like special marketing offers from a clothing company (or similar). The emails looks harmless enough, but if the user is not interested

“Businesses should educate their employees with security courses and communications on the importance of being vigilant with their passwords”

a computer, and they'd have access to the personal details and passwords of the user.

TIP: To avoid these internal threats, businesses should educate their employees with security courses and communications on the importance of being vigilant with their passwords. Password manager software like KeePass or Dashlane can securely store passwords, so you don't have to remember all of them. Alternatively, you can also lock down the USB ports of your workstations to prevent unauthorised devices from being accessed via USB altogether. This approach does need to be considered carefully however, because it makes every workstation much less flexible and increases the workload for the IT department, since every new USB device will require approval before it can be used.

BAITING

Similar to social engineering, baiting methods trick users using information obtained about the person. For example, a hacker could check social media sites and learn that the target has an interest in *Game of Thrones*. That knowledge gives the attacker some bait. Instead of a generic email, the attacker could send the target an email that says ‘Click here to watch the latest Game of Thrones episode’. The user is more likely to click the button which, of course, is actually a malware link, and

in the company, or thinks the emails are too frequent, they can press the unsubscribe button to stop receiving emails. Except in this hacker's phishing email, clicking the unsubscribe button actually downloads the malware.

TIP: A properly configured anti-spam filter should stop these emails, but again, it's best to stay alert.

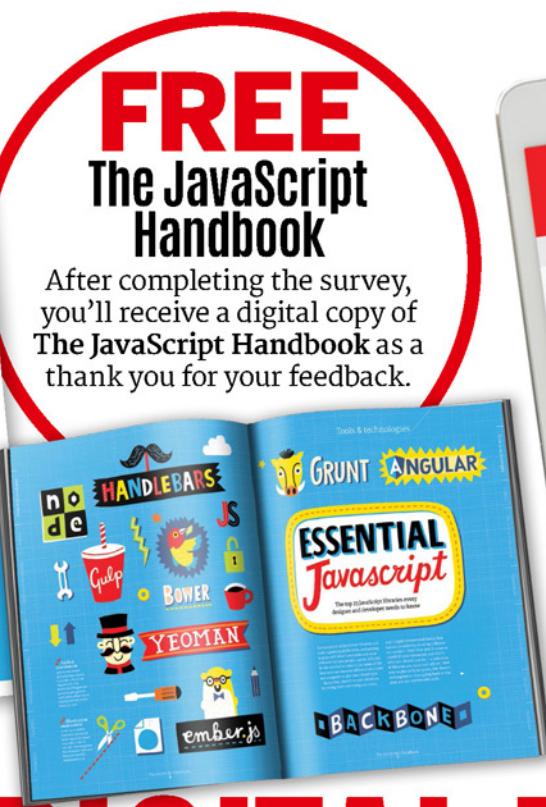
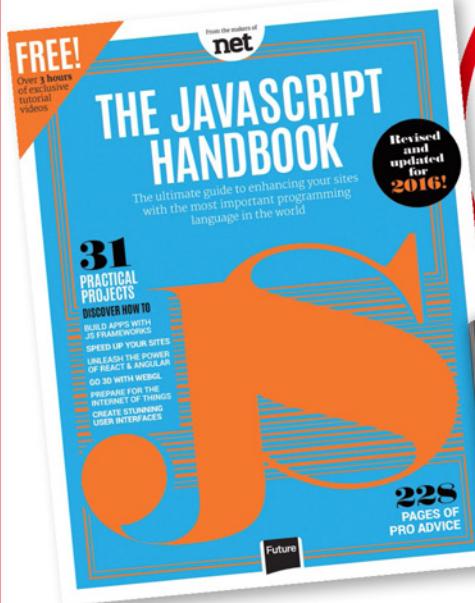
The key take-away is to stay vigilant and up-to-date on the array of methods that hackers may use to steal your data. Educate your employees so they are aware of the techniques listed in this article that may be used to acquire content, such as their login details or personal data. Encourage employees to question anyone they don't recognise, and to be aware of anyone listening to conversations or shoulder surfing. Taking all this aside however, it is worth remembering that the internet remains an overwhelmingly positive and creative place to be, and the world is significantly richer for it. Providing you're vigilant, we can all continue to enjoy the benefits of human's greatest invention. ■

PROFILE
*



Simon joined Fasthosts (www.fasthosts.co.uk) in October 2008, having led the business in a variety of positions and now as general manager and financial director.

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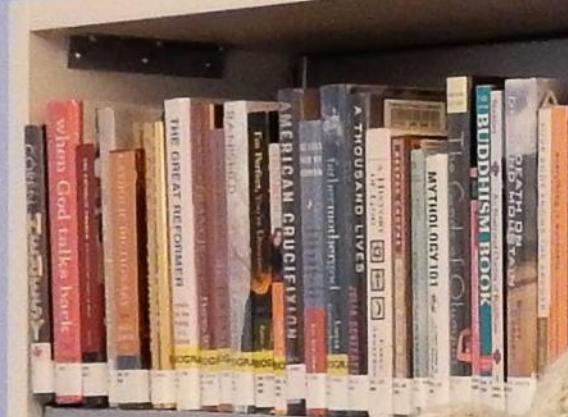




Henri Helvetica

Words by Oliver Lindberg

We caught up with the influential developer to discover how and why he went from viewing web performance as being a bit of a dark art, to becoming one of its most vocal advocates





INFO

job: Freelance developer and web performance analyst
t: @henrihelvetica

> Performance is finally becoming a bigger part of the conversation in web design and development. However, it can still be a challenge to get people to actually consume the great content that's out there and adopt a performance approach on a more regular basis. Freelance developer and web performance analyst Henri Helvetica (real name Henri Brisard) has made it his aim to engage more people in that conversation.

"I absolutely love meeting the community," Henri enthuses. "On the performance side we live in this little bubble – everyone is comfortable with the conversation, we all speak to each other, we know the terminology. It's like speaking to family. But I think it's very important to step out of that bubble. I have a very clear rule: there's no conference or meet-up too small or too big to speak to an audience about what you're passionate about, because quite often you'll see that a lot of people have never come across some of these items that you're discussing, which you thought the everyday developer knew."

Henri stumbled upon web performance, which he considered a bit of a dark art, when

he worked on the dev team of a design firm. He attended a web performance meet-up in Toronto, which he now co-organises, and it sparked an interest. He started to voraciously read the literature – books, blog posts and research, watched tech talks on video and tried to stay on top of the latest developments by following the #webperf and #perfatters hashtags on Twitter, which led him to discover more links and thought leaders. Everything started to click. Henri began to join the conversation and gave himself the memorable pseudonym 'Helvetica' because he thought it would appeal to designers and developers and would make for a good conversation starter at conferences.

Now, as we're pretty much in a mobile-first world, Henri says there's no reason why performance shouldn't be discussed. "In developing countries people are discovering the internet through mobile," he explains, referring to the much-talked-about next four billion people who will access the internet for the first time. "This is their entry point. If someone has paid a few dollars for a mobile phone, they'll never shell out a few

hundred more for a desktop because a mobile will do everything they need. Even in more developed countries people are on mobile the majority of the time. During the day they might be on a desktop but before and after work we can comfortably say that they're on a mobile device, whether that's their phone or a tablet."

One statistic that Henri likes to refer to in his talks is the three-second rule: in a classic study called 'The Need for Mobile Speed' (<https://www.doubleclickbygoogle.com/articles/mobile-speed-matters>), Google's ad management subsidiary, DoubleClick, discovered that 53% of mobile site visits are abandoned if pages take longer than three seconds to load.

"Within those three seconds you have a certain amount of time to get the phone antenna to wake from sleep," Henri points out. "That usually leaves us just one second – commonly called the golden second – to get a site loaded onto the screen, and this despite untrustworthy networks."

It can be tricky to get the CTO of a large company on board and convince them of the





need to invest in performance optimisation, but once you show them these statistics and demonstrate a poor user experience of pages not loading appropriately, the evidence is there. Luckily, there's at least one champion at many companies these days who will defend the need for performance.

Henri suggests that first of all you have to ensure you measure. "You can never improve what you don't measure," he explains. "Once you have your measurements and data laid out, you have to figure out what important elements to measure. You could have two pages that load in nine seconds, but one may have the viewport filled in much quicker, so you have a better user experience. You have to measure what is important in the load process for your site and your commercial enterprise. Think about what's important for your users to interact with. Every site has its own individual needs."

Once he's had a look at a page load, which helps him pick up on certain items right away

(how and when they load), Henri's next step is usually to fire up Chrome DevTools to assess exactly what's going on. It's an obvious choice, because it's right there and it's free – you don't need to jump into another tool to try to discover why a page may be slow.

Yet many developers barely use it. "DevTools is a bit like a smoke detector," Henri argues. "If there's a fire, DevTools will tell you. It will at least show you where the smoke is."

Then Henri looks at the waterfall, which will indicate various issues such as the size of an asset and the latency that was involved in loading it. If the site contains poorly sized images, for example, you will usually see a very long waterfall, which is one of the easier pain points to quickly pick up on. Henri has been talking

about image management at various conferences, because images are one of the biggest culprits for a slow-loading site – an issue that can be fixed fairly easily. As they're the largest source of data, images are also the largest source of data savings.

"Think about what's important for your users to interact with. Every site has its own individual needs"

victim of your network, because a cellular network can never really be predicted, so you want to make sure your assets are small and optimised for the viewport, which means you shouldn't be able to see any desktop-size assets on a mobile device." ▶



► Henri also recommends lazy loading, a technique that delays the loading of an object until it's needed. "Not all users are going to make it to the bottom of a page," he warns. "Quite often you may be loading assets that are never going to be seen. Employing lazy load is going to be very beneficial because you're saving on data as well as battery drain or memory management. If you're not loading the image, you're not going to have any memory to usurp on the device."

Another reason Henri favours DevTools is because it now also provides metrics like the first paint (the time it takes for the user to see the first pixel of content) and the first meaningful paint (the time it takes for the page's primary content to become visible), which can be measured with Google's Lighthouse (<https://developers.google.com/web/tools/lighthouse>), an auditing tool that provides recommendations on image sizing as well as compression and data savings opportunities. Then there is the filmstrip (either in DevTools or performance tool WebPagetest) that shows incremental screenshots of the browser rendering a site, so you can see what a page looks like when it loads. By examining them you can figure out which assets were loaded when and look into ways of loading some of them at an earlier time in the timeline. In WebPagetest

(which Henri praises for its inspiring level of detail) you can also export a video of the load and compare the filmstrip with that of a competitor. "Once you connect the dots, you can explore how to improve the user experience by bringing these assets into the viewport faster," Henri explains. "For example, if you remember the three-second rule and open up DevTools, you can start to analyse which assets are loading beyond the three-second threshold and make some adjustments right away. It helps you prioritise what needs to load as soon as possible, and that brings us to what is well-known as the critical rendering path."

Henri highlights that design decisions have an impact on performance as well, and that your first load into the viewport ideally should not just be as quick as possible but also as clutter-free as possible. For that reason you need to understand the series of events that take place to render the initial view of a web page – the critical rendering path. These events can be optimised by avoiding loading assets that are not necessary and by making decisions around the selection of web fonts and image formats. "Make sure you keep your SVGs as complexity-free as possible," Henri suggests by way of an example. "Then you'll have less code when you render your SVG. I hear this from

developers all the time. They'll get an SVG from the designers and have to send it back because it would affect performance."

Henri loves getting this kind of feedback from people who attend his talks. He loves connecting with the audience to understand their particular needs and what they go through in their day-to-day development lives. When he goes to conferences he gives out Rapper Turned Dev pins (<https://rapperturneddev.myshopify.com>) with rap/dev puns like LL Cool JS, RUN MVC and WU-TANGULAR – another conversation starter.

At Generate New York in April, Henri will discuss new APIs that are used to measure performance. Some aren't that well-supported yet, some are experimental, and some have user experience implications. But they all can be used to make very good performance and user experience calculations and assess what's happening on a given web page. The main thing, Henri points out, is to keep performance in mind, whatever your role, so that it becomes second nature. Also make sure to spread the word and pass on what you've learned, just like Henri, so others can learn, too, as it's impossible to keep up to date with all the latest tricks and techniques yourself. It's undeniable: performance matters – now more than ever. ■



"You need to understand the series of events that take place to render the initial view of a web page – the critical rendering path"



★ THE DESIGN OF BUSINESS

LOYALTY

Christopher Murphy explores the importance of Customer Lifetime Value and 'The 20%'



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> With your business taking off, it's tempting to start considering expanding your customer base through advertising, marketing and other – often expensive – promotional efforts. While widening your customer base is an essential part of any growth strategy, don't make the mistake of focusing on new customer acquisition at the expense of taking care of your existing customer base.

Whether your business is product- or service-based, its lifeblood is its customers. Your existing customers – your loyal supporters – are the driving force behind your business: don't forget about them in a headlong rush forward to expand. As Fred Reichheld, the author of *Loyalty Rules!*, summarises in an excellent article on the topic for Bain & Company: "Consider the cost of serving a long-standing customer versus the cost of courting one. Across a wide range of businesses, customers generate increasing profits each year they stay with a company."

Put simply: It's less expensive to cross-sell or upsell products to existing customers than it is to acquire new ones. It's easy to get seduced by customer acquisition, but it's far better to focus on what those customers mean to your business in terms of profitability. Reward your loyal customers

and they'll keep coming back, resulting in a higher Customer Lifetime Value (CLV). CLV is the amount a customer spends with you over their lifetime and it's where your true growth lies. Every sale you make is the start of a new relationship – focus on that and the growth will follow.

'THE 20%'

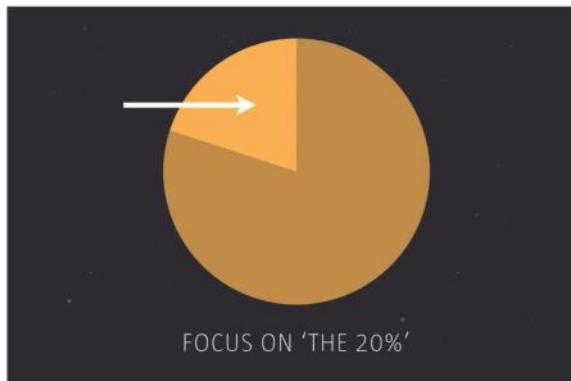
The 80/20 rule – also known as The Pareto Principle, named after the 19th century Italian economist Vilfredo Pareto, who first observed the phenomenon – states that, for many events, approximately 80% of the effects come from 20% of the causes. We can apply this rule effectively when we think about business growth strategies.

Look closely and you'll often see that 20% of your customers result in 80% of your sales. Think of your repeat customers as 'The 20%', a valuable asset that drives the majority of your sales, and you'll soon realise the importance of looking after them.

It's important to invest time in your 20%; these are your most valuable customers and, as such, need to be taken care of. It's well worth periodically undertaking an analysis of your customer base and asking yourself:

- What are your most loyal customers buying?
- What other ways can you serve them?
- How can you maximise their CLV?

Consider how you can tailor your products and services for them and you'll drive growth organically. In short: focus on the 20% before you focus on trying to expand your customer base, worrying about the 80%. Pareto's ideas (there are many others) offer us valuable insights into the world of business. Focus on 'The 20%': build long-term relationships; reward your customer's loyalty with small, spontaneous gestures; and consider other ways you can serve them. Do that and you'll find you supercharge your business growth. ■



80% of your sales come from 20% of your clients, so focus on that group



★ Q&A

HELEN TRAN

After four years at Shopify, Toronto-based product designer Helen Tran recently set out on her own. Here she talks soft skills, website redesigns and multiculturalism



job: Product designer
w: helentrans.com
t: [@tranhelen](https://twitter.com/tranhelen)

net: What were the biggest lessons you learned during your time at Shopify?

HT: There are two that I think have turned me into the designer I am today. Firstly, that soft skills are underrated. Nobody ever tells you this when you graduate or enter the industry, but sometimes your technical skills aren't enough. You can certainly get very far with just them alone but as you become more experienced, your soft skills are what set you apart. I had been making changes in this regard but Shopify really put the pressure on me to finesse it quicker.

The second lesson was about what designing systems means. When most designers think design systems, sometimes they're thinking of things like typographical systems or art direction (branding system). These are consumed internally but there's more to systems than that. You can design a system for management processes, operations and logistics, product platforms etc. Design process can be applied to everything else in a business and return ten times the value.

net: Since leaving Shopify, what's the main lesson you've learned about being an entrepreneur?

HT: I think it's a bit early to answer this right now as I've just started putting together the building blocks. It's my second time around; I also worked as a freelancer between 2008 and 2013. But this time I'm a different designer, and frankly, a different person. So far the only thing I've learned is that it's different. I can feel myself being more cautious, despite being more competent now than ever before. Whether or not that's a good or bad thing can be left to the jury to decide.

net: You recently redesigned your website, helentrans.com. What were your goals, and how did you set about achieving them?

HT: I was looking at where I was going and I knew my designer self would take a back seat in priorities over the next few years. I wanted to document my growth because I'm a completely different designer when I started at Shopify than I am now.

I don't believe designers should spend time purely on creating flows and UI. After all, experiences are impacted by how the business operates, the morale of their employees, and how well the team executes. I chose three projects, two of which were multi-year projects, which spoke to this: three stories about how I applied design process to management, leadership, and product.

net: What's exciting you in the world of web design right now?

HT: The motion of old Flash websites are coming back. This is not as exciting as it is entertaining.

net: For those who haven't visited, why is Toronto the "best city in the world"?

HT: The more I travel, the more I realise it's the only place in the world that has figured out 'multiculturalism.' There's a large difference between tolerance and acceptance and I feel like Toronto is the closest to acceptance. Also, the other day, the biggest news story was, 'MOOSE ON THE LOOSE.' It's peaceful here.

net: If you could have a conversation with your younger self, what would you tell her?

HT: I would likely remind her to enjoy the progression of her career. I spent the first four or five years always wanting the next thing. Now that I look back, I realise how lucky I have been and I wish I had enjoyed it more while it was happening. I find fulfilment in a number of things related to design now, however, I sometimes miss how great it was to simply make a website and launch it. ■

★ UX

WHAT ARE THE MAIN BARRIERS TO GOOD UX?

Our experts weigh in on what's holding user experience back right now in 2018, and what can be done about it



BARRY WOODHALL

Director and UI/
UX designer, Moken
www.moken.co.uk

At Moken, a remote team of UI and UX designers that work closely with companies worldwide, we believe that the main barrier to good UX can only come from a lack of inquisitiveness for the brief. In the field of user experience, there's more than one route to success and in 2018 we expect no different, with user data still informing on solid design decisions. One exciting barrier (or opportunity perhaps) to explore will be the continuing rise of artificial intelligence and the consideration of AI-powered platforms during the early UX research and planning stages of projects.



JAMES DAVIS

Head of UX, Verv
<https://verv.energy>

The growing number of smart devices is pushing the UX industry to create more dynamic and continuous digital experiences. Think booking an taxi through Uber using Alexa and checking your phone to see when it arrives. 2018 will see us moving towards omni-channel UX. Creating a seamless user experience, where users can transition their brand interactions smoothly between devices, will be a tough but exciting.



**ROCHELLE
DANCEL**

Experience design strategist,
Randomly
www.eversorandomly.com

Ensuring a diverse set of perspectives is proactively engaged in the design process is crucial (and more of a challenge) as we increasingly develop products and services with AI and automation to reflect and shape the world around us. Diversity in our teams has been a much-debated issue in our industry. It's not a 'nice to have': it's a business imperative, especially if we want products and services that reach – and work for – audiences at scale. Ensuring that we have designers, researchers and strategists who are reflective of diverse users is also especially important in a design culture that seeks to get that MVP out as quickly as possible.



WILL GRANT

Co-founder and design lead, Prolytic
prolytic.com

 There's one huge barrier: bad UX designers. Somewhere along the way, many UX people forgot that design – UI design in particular – isn't art, it's design to perform a function: to serve users. Too many designers are slavishly following the latest design trend, applying 'flat design' to every app, or trying to be different for the sake of it, with custom-designed interfaces and arbitrary visual metaphors. If designers can try to be objective and fight for the user, testing with real people as they go: we might just stand a chance of getting good UX in 2018.



CHRISTOPHER J HODGES

Solutions evangelist, Mendix Technology
www.mendix.com

 One of the main barriers facing good UX in 2018 is scalability. With more and more large organisations prioritising design as a competitive advantage, they face a big challenge in scaling their design culture and processes. They need to support multiple teams and platform experiences, rather than single app experiences, while also looking to maintain the same level of quality and design consistency. The challenge is only made bigger given the shortage of UX resources for many large organisations: they tend to hire more developers than designers, with on average just one designer for every 17 developers.



JULIETTE PRETOT

UX designer and junior JavaScript engineer
<https://juliette.sh>

 The biggest challenge is also the most exciting opportunity for learning: users are busy and we need to display the information they need, right away. New devices such as smart speakers, watches and cars each introduce their own constraints. You can't glance over information presented through a speaker. You can only lift up your wrist for so long before your arm gets tired. Our UIs needs to scale across all platforms. To do this, they will have to be context aware and personal. Adjusting to those new constraints won't be easy, but will lead to better UX everywhere, not only for your smart speaker, but for your phone and computer, too.



STACEY K FLATT

Freelance UX designer
staceykflatt-design.com

 The main barrier that I continue to see is that many websites are not considering a mobile-first strategy. Mobile users have already surpassed the number of people using the web from larger screens, but the digital world has yet to catch up; a site that is not responsive will lose visitors.

UX will also need to continue growing the use of accessibility across the web and applications. Accessibility will become even more important in the future, and products that do not consider it will be left behind.

RESOURCES

10 STEPS TO AN ENGAGING UX

<http://netm.ag/303-10-UX-steps>

A UX team builds a blueprint that outlines every detail of a site's functionality. But it's not a one-shot deal; getting to an intuitive and engaging user interaction requires many steps. Here Irene Pereyra shares 10 tips to help you deliver an amazing interactive experience.

FOUR TENETS OF UX STRATEGY

<http://netm.ag/303-UX-strategy>

In this extract from her book, Jaime Levy breaks down the most important tenets that you need to understand in order to successfully implement the tools and techniques of UX. Think of it as a primer to get you and your team thinking like a UX strategist.

10 ESSENTIAL TED TALKS

<http://netm.ag/303-TED-talks>

TED's online platform is replete with talks that can inspire and improve UX design processes and outcomes. Here are 10 of the best, from talks on the future of prototyping user interfaces to comical musings on how to build a user-focused team.



★ BLOCKCHAIN

WHICH BLOCKCHAIN SHOULD YOU PICK?

Craig Sproule looks at how developers should approach the business of blockchains

For most developers, the question of whether blockchain will have a transformative effect on their jobs is settled. For those still to be convinced, the very fact that different blockchains are fundamentally networks with protocols for sharing and storing information should indicate how they will reconfigure the internet stack. However, it is still an emerging technology with underlying issues that need to be resolved.

This phase isn't unfamiliar if you are used to seeing different languages, frameworks or approaches fade out of the limelight. That's why, for now, the best approach is to remain blockchain agnostic. But this is very different to ignoring the technology. Instead, you should understand the fundamentals, understand the issues and take your first steps into developing for this future state.

Probably the most important things to understand about blockchain technology

are that it's distributed, immutable and transparent. The reason so many people are excited about it is because they believe it could become the foundation of a new internet. Bitcoin, as well as other cryptocurrencies, have seen their prices spike as a result. Yes, there are speculators involved, but you only have to look at the list of investors to understand how significantly some of the biggest names in tech are taking this.

They believe that one or a number of blockchain protocols will take their place at the base of a new decentralised internet, with layers of other protocols and apps sitting on top. In some ways, this will mirror what exists today. This is why it's so important for developers to immerse themselves now, so they understand the technology that will underpin their future work. At the same time, they need to have an understanding of why this technology isn't established yet.

Multiple potential paths lay ahead for blockchain, as it grapples with a number of problems. One of the most significant right now is scalability. The cryptographic consensus approach of validating the shared ledger makes it trustworthy and extremely secure. However, as more and more transactions have needed to take place, the computer power required has increased to the point where real scale seems impossible.

This is a problem across blockchains, but multiple solutions have been proposed. One is bigger blocks that can store more transactions, an approach that resulted in the Bitcoin Cash 'fork'. Another is proof of stake, where a stake is put up as collateral against false transactions, rather than proof of work through cryptography. Another possible solution is the idea of off-chain protocols, such as the Lightning network or Radian network, facilitating fast transactions and only interacting with the blockchain at specific points.

Right now, none of these have emerged as an all-conquering winner, so developers would be naive if they were to focus all their efforts on one solution. Instead, they should focus on building apps that can be deployed on any blockchain.

While you might think it's better to wait until these major issues have been resolved before you jump into blockchain technology, that would be the wrong move. You can start to develop decentralised applications without committing them to a single blockchain. While tools and processes are still emerging, open-source software is oiling the wheels of progress as highly capable developers try to push the technology forward.

Finally, it's important that developers understand the big picture behind the value they provide hasn't changed in the slightest. They should focus on building applications that solve real problems for people because that's the most important thing, both now and in the future. A decision on which blockchain they choose to deploy it on can wait. ■

PROFILE

Craig is the founder and CEO of Crowd Machine. He has been working in software development for over 30 years, during which time he has held many senior positions at software companies.

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#302 FEBRUARY

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

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SUBSCRIPTION
SEE PAGE 18



#301 JANUARY 2018

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



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The Money Issue. How to survive – and thrive – in an increasingly uncertain world, plus eCommerce, finances & project management

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#300 DEC 2017

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#299 NOV 2017

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#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 the inclusive design principles



#295 AUGUST 2017

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



#294 JULY 2017

The 10 Rules for Better Web Typography, why you should be using a Service Design approach and how to use CSS Grid Layouts



#293 JUNE 2017

The new CSS trends, tools and techniques you should be using right now, plus how to design the perfect UX for offline use



#292 MAY 2017

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GALLERY

Sensational design and superb development

JOSHUA GARITY



Josh is the founder of Candorem, a 39-time award-winning UX creative agency, and UXTriggers.com, a data-driven colour theory tool.

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w: candorem.com

SMASHING MAGAZINE

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Vitaly Friedman wrote

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11 comments

Workflow 277

* JAMSTACK, REACT, FLEXBOX

SMASHING MAGAZINE

smashingmagazine.com

After 18 months of redesigning, Smashing Magazine launched its website in a big way. By not shying away from red, a colour associated with authority and strength, it chose to stand out against typical editorial websites that predominantly utilise white as a backdrop.

People often associate user experience with design but it's equally relative to the platform's architecture as well. Visitors make instant subconscious decisions that drive their opinion on the value and trust of a website, with a fundamental influence being loading speed. Because of this Smashing Magazine chose to move away from using a combination of WordPress, Kirby, Rails and Shopify. By moving to JAMstack: a methodology for

“We want to reward and highlight great people doing great work, and support their contributions”

VITALY FRIEDMAN, FOUNDER OF SMASHING MAGAZINE

front-end web development driven by JavaScript, reusable APIs, and streamlined markup, it was able to improve issues with usability, scaling and caching.

The company collects anonymous user behaviour data using Hotjar to assess pain points that expand beyond technical frameworks. Over time it hopes to remove all advertising from the site and focus on the readers.

 slack

Why Slack? Pricing About Us Find Your Workspace Create Workspace

It's the foundation for teamwork

Slack creates alignment and shared understanding across your team, making you more productive, less stressed, and just a little bit happier.



* CSS GRID, FLEXBOX, LESS

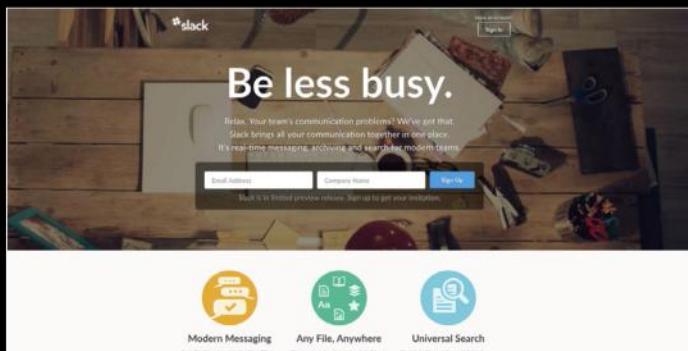
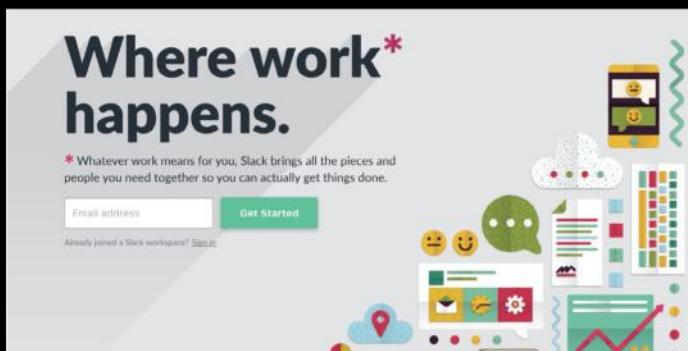
SLACK

slack.com

 Slack, the fastest growing business application in history, updated its website in 2017 to better reflect its core values and company culture. Although the website is simplistic in structure, one of the first elements you notice are the vibrant, stylised illustrations from designer Alice Lee.

"Trying to capture the playful and collaborative aspect of the culture and given how warm and friendly the tone of these are, I wanted to push it beyond your standard 'people working at a desk' imagery," she explains. It's an interesting direction, as it conflicts a bit with the actual application's design, but better embodies the personality of the company. It raises the question: does the marketing site and application truly need to share fonts and design elements or can they both represent the same idea differently?

The Slack team tackled vital improvements like accessibility and decoupling asset dependencies between the web-based Slack client and the marketing site with a behind-the-scenes code overhaul. To accomplish this a new UI framework (spacesuit) was created. Slack's spacesuit framework is class-based and utilises reusable components and utility classes, reducing CSS load by 70%. It is inspired by the BEM naming convention where classes are in one of three groups – Block, Element and Modifier – and uses single letter namespaces.



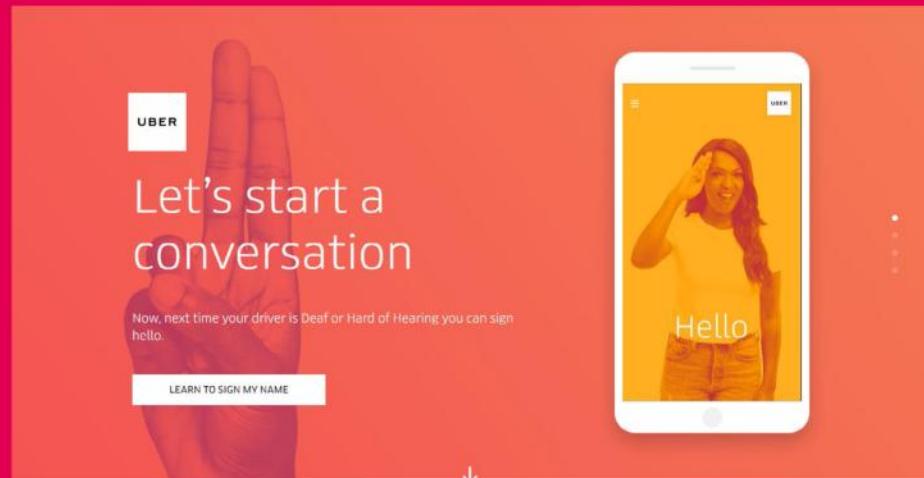
* HTML5, VIDEO, PIXIJS

UBERSIGNLANGUAGE.COM

ubersignlanguage.com

 A strikingly simplistic approach to driving home Uber's integration of accessibility into the company culture; this website is a stellar example of design with restraint. A common approach to design is to explain value, but it's another to rely on interaction to educate. Uber has given the deaf opportunities to become drivers since 2015 by incorporating accessible technology directly into its app, such as flashing trip requests notifications instead of an audio prompt, text-only communication options, advance notifications to inform the rider that their driver is deaf or hard of hearing, and an additional request for the rider to enter their destination in advance.

It has now brought that another step forward with ubersignlanguage.com. You are prompted to enter your name and are greeted with common phrases like 'yes', 'no', 'turn left', and even your name. What makes this experience stand out is the visual feedback, or short form videos, which instruct you on how to sign each phrase. It shows you don't need long form clever copy in order to convey a strong message for your organisation. You just need to understand the goal of the end user and deftly provide solutions.



“Nice use of conversational UI and video, both of which are often misused. No interface element is good for everything but those are good examples of how to use them well.” LAURA KLEIN, AUTHOR OF *UX FOR LEAN STARTUPS*



* WORDPRESS, HTML, CSS

THE SAVVY BACKPACKER

thesavvybackpacker.com

> The Savvy Backpacker, a budget focused travel blog, follows husband and wife team, James and Susan, as they backpack to Europe.

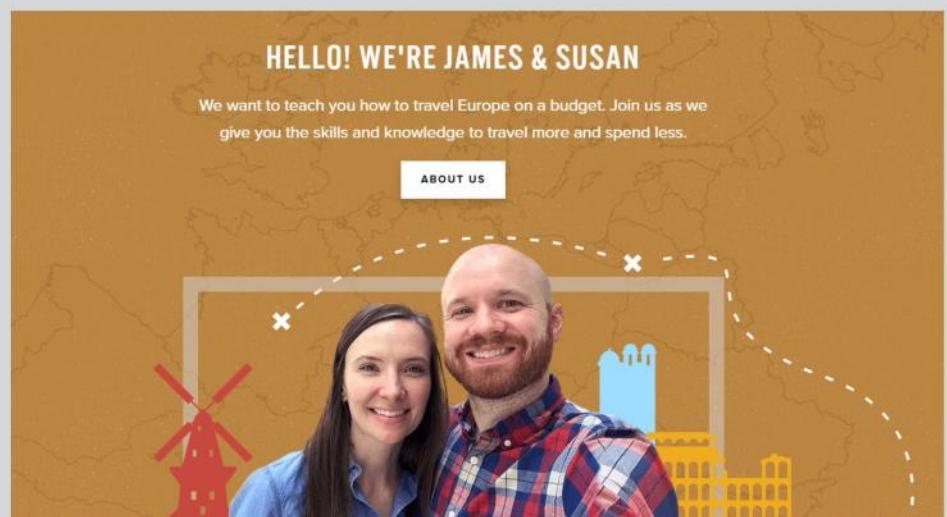
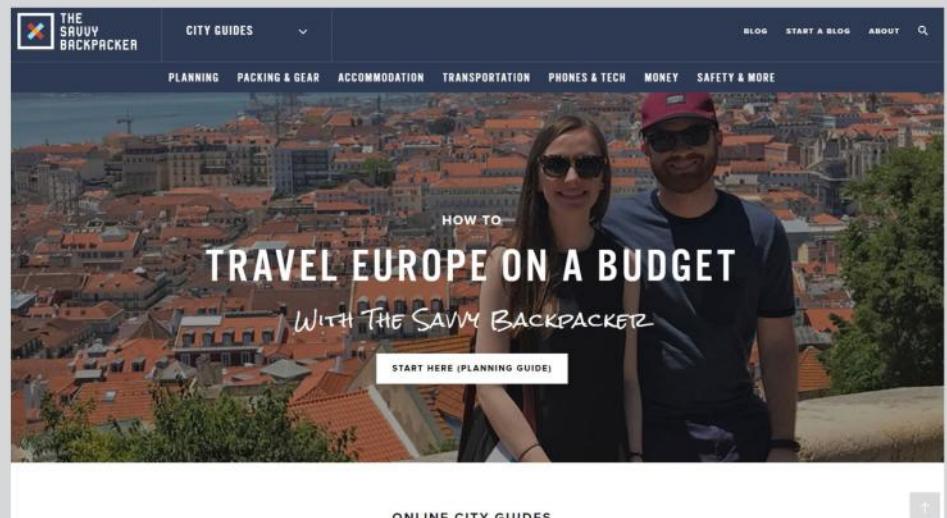
They package online city guides as their key point of value and do a great job pulling that user pathway out of the main navigation and placing it next to their logo as a primary touch point. Each guide acts as an archive of past visits where they break down topics in great detail, like the best hotels, travel costs, and how to pack your luggage.

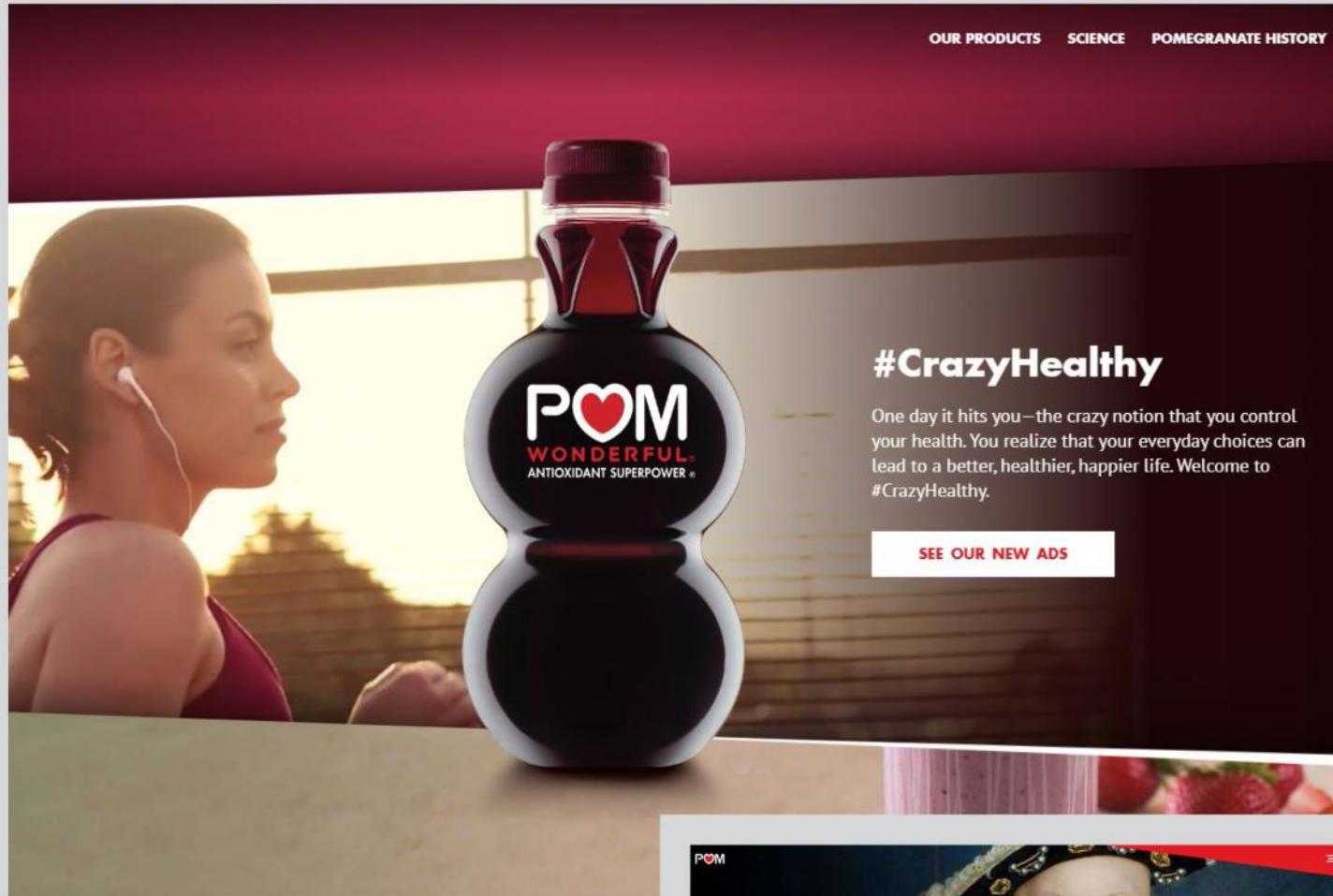
Ben Bush, co-founder of FHOKE, elaborates: "It really was that, a focus on the City Guides making them front and

foremost on the home page, a dedicated landing page for them, and clear and separate navigation links that were quick to browse, too".

Travel blogging is a competitive space. To further establish themselves as a legitimate resource, they needed to do more than simply take nice photos and generate an incredible amount of content. They needed to guide visitors to the proper content intuitively.

Ben adds: "The key is not being too alternative and placing these in areas users are familiar with. If they have to search around for something, you've lost them already."





* REACT, WEBGL, CANVAS

POM WONDERFUL

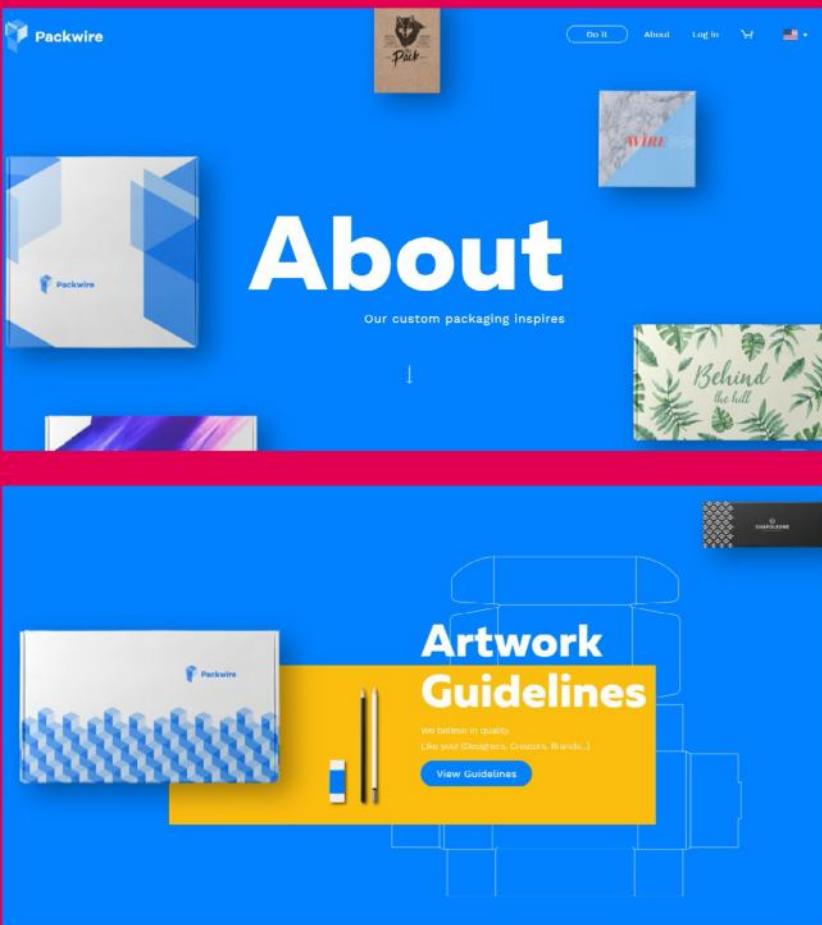
pomwonderful.com

It would have been easy for POM to rely on its polarising bottle design or existing marketing campaigns to drive the digital experience and play it safe with the website.

In an inspiring move, once you venture beyond the home page, it chose to create a museum-like experience, focusing on the history and art of the pomegranate. In the History section you will find fully voiced stories for 68 unique entries.

Andrés Conde, group director of Digital POM Wonderful, states on his website: "Understanding our target and their particular interests, drove a lot of the UX, especially as the site is also the first time the brand will sell the product online. We had to be able to weave the content-centric brand site with a functional shopping experience." The website is bold, colourful, and always seems to be in motion. The site was built as a single-page app that loads assets in the background to achieve smooth transitions between sections of the site.





* SCROLLMAGIC, BOOTSTRAP, MAGENTO

PACKWIRE

packwire.com

Packwire's marketing site, packwire.com, shows little restraint in its attempt to make a strong first impression. With its use of vibrant colour and scroll-powered movements, users are left with a sense of childlike exploration. Rounded buttons and playful hover interactions bolster this as you dig deeper. The real gem of this website is the service itself: the set up of your own custom made-to-order box. Who would have thought customising a box would be so intuitive?

But what exactly makes this intuitive? The separation of manufacturing information and design, for starters. On the left you have fulfilment details such as box type, size, quantity and price. The right side focuses solely on the creative implementation of your custom creation. This mirrors the hemispheres of our brains as well: left brain for logic and right for creativity.

Beyond that, the company also makes an attempt to understand the end user and their needs by offering two fully functioning non-checkout options: Get Link and Save. Get Link enables you to generate a bit.ly URL to share your custom work in progress, generate a .jpg or share on social media. Save enables you to save your work to resume later.

How does this help? It means creatives can generate mock-ups that can easily be shared with the client or stakeholder for approval, which then increases the likelihood of a purchase through the service. It's really well thought out as a service for the user.

Note: Pay a visit to <http://bit.ly/2AaI7Wn> to view a sample net magazine box we had fun creating. ■

SHOWCASE

Sublime design & creative advice

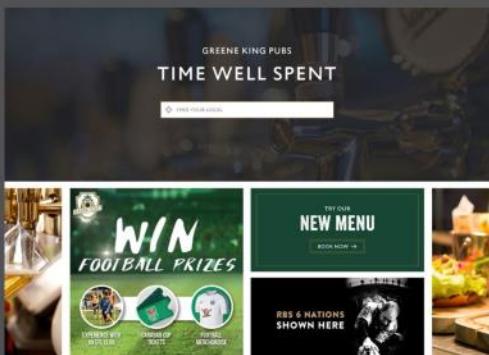
THIS MONTH FEATURING...



PROFILE

50

We chat to self-taught UX/UI designer Rich Brown about his work with pop stars and film directors, and the importance of being decisive



HOW WE BUILT

56

The team at Zone explain how it created a directory of local pubs for Greene King Pubs, the UK's biggest brewer

DESIGN CHALLENGE

This month...

COFFEE SHOP

* PROFILES



CRAIG MCLACHLAN

Craig is a UX designer and pixel botherer at Arnold Clark Automobiles in beautiful Glasgow.

W: www.craigmclachlan.co.uk **t:** @crrrrraig



DAN GEORGE

Dan is working as a principal designer at Claims Consortium Group, based in Taunton.

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DAN WISEMAN

Dan is a founder at Web Wise Media, where he works for clients including Duo Boots.

W: www.webwisemedia.co.uk **t:** @web_wise_dan

BRIEF

This month we'd like you to design a website for a coffee shop. Your site might seek to attract connoisseurs with information about the interesting coffee blends on offer, or it might focus on conveying something about the atmosphere and community of the café – the angle is up to you.



* CRAIG MCLACHLAN

BUDDIES

A coffee shop that puts community at the heart of the experience

> Buddies is a new coffee shop and coffee subscription service that aims to build and maintain a community of local coffee lovers. Buddies hand selects coffee beans of the highest quality for the local community in Paisley, the likes of which most of us wouldn't have access to. The goal is to use the space to bring together coffee lovers of all ages and turn Buddies into a thriving venue with regular music gigs, barista training events, parties and corporate team building activities. The main goal of the homepage is to sign customers up to the monthly subscription service. The next goal is to instil and maintain a sense of community, showing Buddies as a hive of activity, giving customers and prospective customers an easy way to see what's on and what's coming up. We will use location services and Apple Pay, Android Pay, and PayPal to enable users to book events online and even order coffees on their phone when they are in a hurry and need to skip the queue.

CLOSE UP

(1) The header is an ideal place for the main call to action and follows a design pattern used in most sites selling subscriptions or services. (2) It's extremely valuable to get the USP of Buddies across in the header in big, clear typography. These calls to action let the user delve deeper into the benefits of joining, read about the latest speciality coffee in 'Roast of the month' and shows location and directions. Each section helps sell the service and the culture and will convert more customers. (3) The events section is designed to show off the hive of activity and community that Buddies has become. It's useful for existing customers to find out what's happening at Buddies during the week and it's an easy way to buy tickets and book spaces at events. (4) This mobile feature sets Buddies apart from its competitors – users can place orders from their phone. This is a very simple shopping cart that sells the most popular items. Once items have been chosen the user can pick a collection time and then pay with Apple Pay PayPal etc.

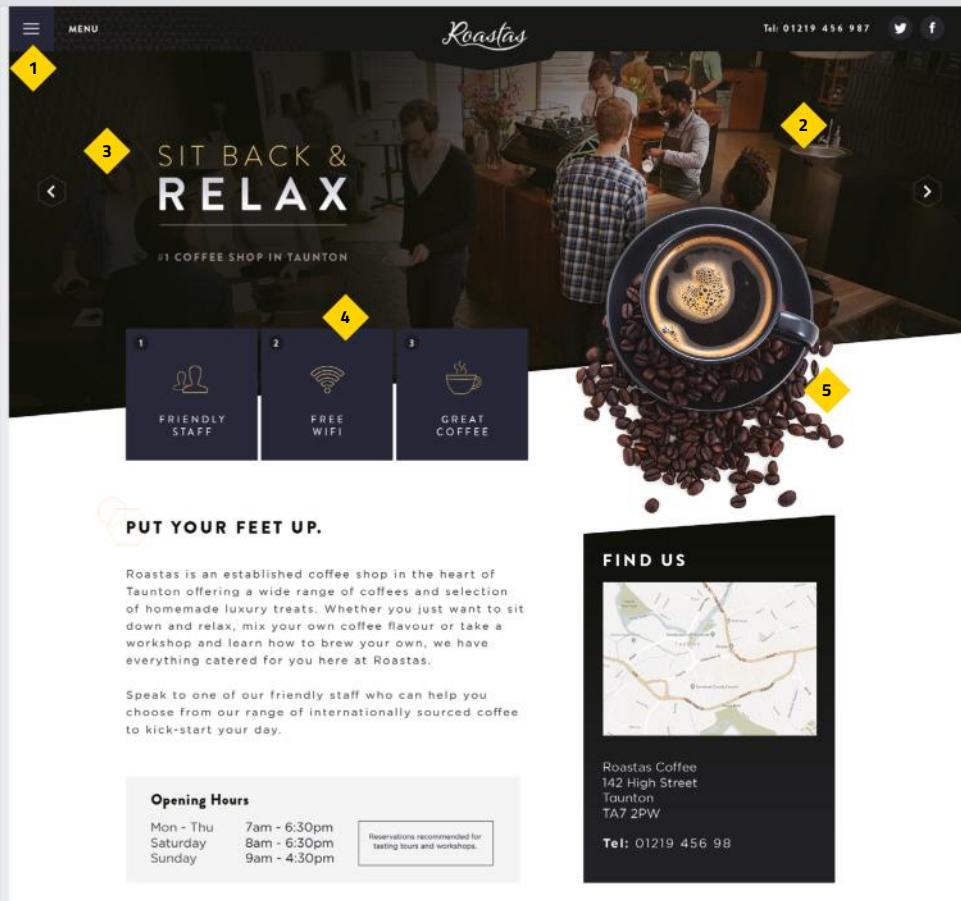
MY MONTH

What have you been working on/doing this month? I've been mostly playing with Ghost CMS for my new blog. We have a photography competition at work, so that's had me out and about with my camera the last few weeks.

Which two websites have you visited for inspiration? Unsplash for photography and Muzl for everything else. Sadly nothing has filled the fffound-shaped hole in my life.

What have you been watching? High Resolution, Peep Show.

What have you been listening to? I love techno and have been playing Slam's latest EPs (*Sanctuary* and *Prospector*) to death.



MY MONTH

What have you been doing this month?
Besides surfing and playing football, I've been working on different UX and design projects, including an insurance tracking website and app.

What sites have you taken inspiration from?
I use both Pinterest and *designspiration.net* for styles and colour palettes, plus *webdesignernews.com* and of course Twitter for all things web.

What have you been watching? The last series of *The Sopranos!*

What have you been listening to? A lot of RJD2 and Flume, plus I've got back into Gilles Peterson – Brownswood Recordings.

* DAN GEORGE

ROASTAS

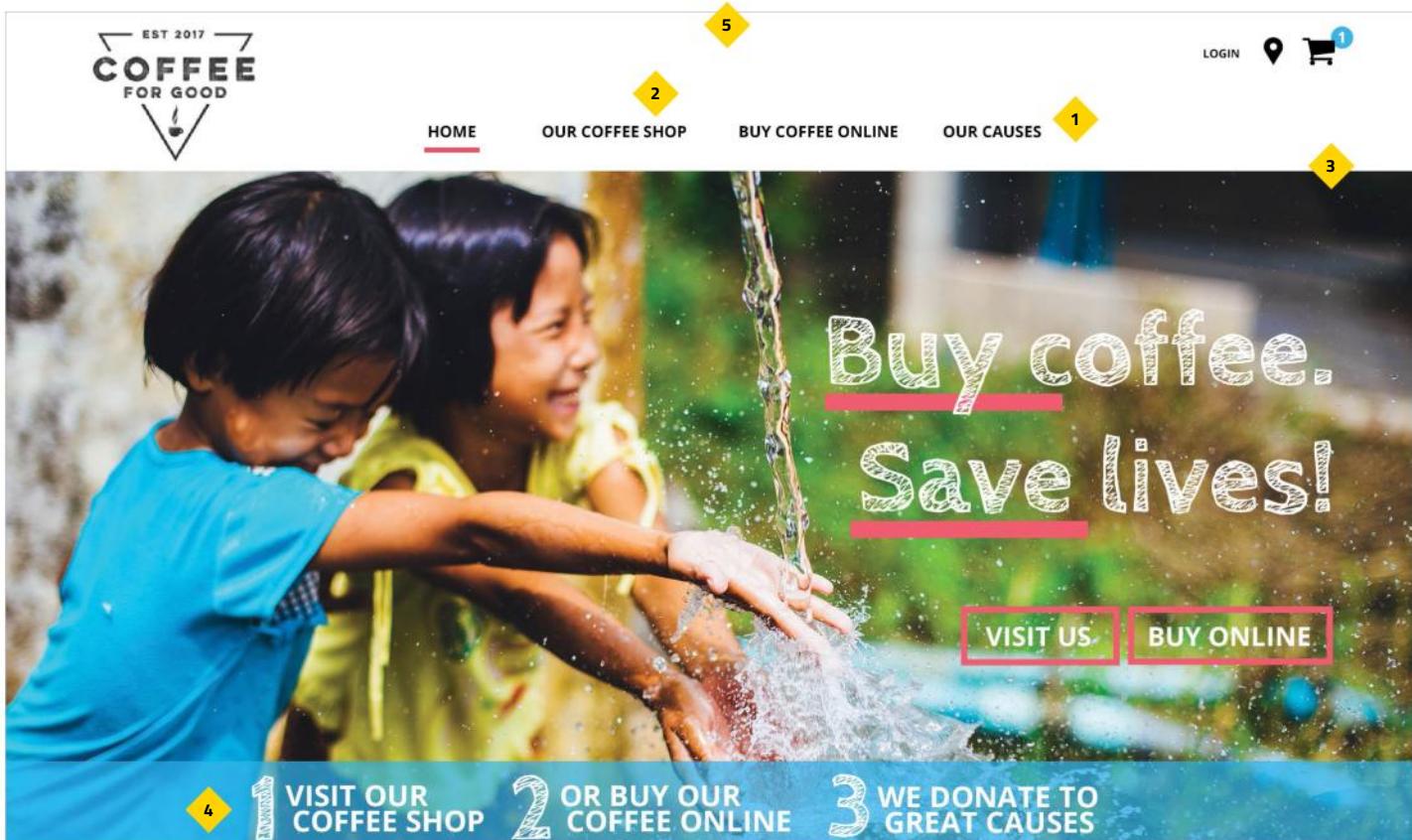
A website that takes some cues from Swedish design elements



Roastas is a site for a high-end coffee shop, concentrating not only on the coffee but a place that offers a wide range of experiences including tasting tours, private hire and coffee workshops. The design itself is inspired by a trip I took to Stockholm, which I have referenced by the inclusion of sharp shapes, vibrant patterns, and bold spot colours. I wanted to keep the main focal point of the design on the subject, while including a lifestyle backdrop demonstrating to the customer what they can expect when visiting the shop. With this in mind, I have kept the main navigation header simple so as not to distract from the two main images. For the colour scheme, I wanted to keep away from rich brown colours often associated with coffee branding, and choose a palette that gives an impression of luxury. Customers want to access information such as menus and shop location on the move, therefore a responsive website is necessary.

CLOSE UP

(1) The menu navigation is hidden and activated on a click to keep the header of the site simple, which means the images and main headline stand out on the page. (2) A large-scale lifestyle image conveys the experience of the coffee shop to the user and gives them an idea of what they can expect when visiting the shop. This fades with three or four lifestyle images in a gallery to help enhance the user's interest. (3) The headline stands out from the page and has similar colours to the coffee cup to attract the eye of the user and enable them to make the connection between the wording and the picture. (4) The bold, purple boxes highlight the three main selling points of the coffee shop: friendly staff, free WiFi and great coffee. These have been kept simple in design to further express the points, which also display part of the company values. (5) A coffee cup demonstrates the product on offer and shows the user what they could be drinking if they visited the shop.



* DAN WISEMAN

COFFEE FOR GOOD

A responsive site built with WordPress, Shopify and Bootstrap

> Coffee for Good is a community-orientated coffee shop and online store. Each product is ethically sourced and every sale raises money for good causes. Customers can vote online and in the store for the 'cause of the month,' from a selection chosen by the team. The walls of the coffee shop are covered with stories and photographs of important issues and the good work being done. Regular events like workshops are held after closing in the cosy store.

The eCommerce part is built on Shopify, with a separate WordPress-powered subdomain for content-based functionality stuff like voting and the blog. Eventbrite integration is used for event sign-ups and Mailchimp to keep visitors informed. A customised version of the Bootstrap framework ensures the site is fully responsive.

The images used are of the people and places benefitting from the sale of the coffee, as well as the warm interior of the physical store.

CLOSE UP

(1) The site features a directory of past charitable successes, in addition to the current fundraising project. A live total will be linked to the Shopify API showing the amount of money raised for each online sale of coffee. The Shopify POS system can also be integrated to take into account all of the money made from the offline sales. **(2)** It's important to remind visitors about the physical space: the coffee shop. A page dedicated to the events happening, the facilities available and giving an overall feel of the décor is included. **(3)** This banner will change depending upon the project underway. It's also important to include images of the physical coffee shop as well – so this may rotate depending upon the latest event. **(4)** Call to actions are clear and obvious when a user visits the site. **(5)** By ensuring the website is fully responsive with a simple and clear layout, users on the go can browse and explore at ease.

MY MONTH

What have you been working on/doing this month? Planning my team's leave and ensuring projects will run smoothly.

Which two websites have you visited for inspiration? I'm working on a 2D videogame, so I've spent a lot of time browsing Pinterest to find the retro 8-bit art style I like and want to incorporate into my own work.

What have you been watching? *Designated Survivor* on Netflix.

What have you been listening to? My girlfriend and I have just seen one of my favourite bands, The Killers. I've had them on repeat ever since.



★ PROFILE

RICH BROWN

<http://richbrown.info>

The self-taught UX/UI designer tells us about his work with pop stars and film directors, and the importance of being decisive

If you ever worry about getting stuck in a rut, take a leaf out of Rich Brown's (richbrown.info) book. A few years ago this Norwich-based UX/UI designer packed a suitcase and moved to Barcelona for a change of scenery, and his seven-month stay in Spain helped inspire him and invigorate his career. A self-taught designer, he's worked with clients such as Beyoncé's fashion line and film director Michael Steinberg over a long and varied career; we caught up with him to find out more.

Hi Rich, can you tell us a bit about yourself?

I'm a freelance UX/UI designer, I've been working in the industry since 2001, now I'm adding that up, 17 years feels like a long time! I've been in and out of agency life throughout my career, but I'm happiest as a freelancer, it's where I feel I can be my most creative and I find myself in a position where I can pick and choose the projects I work on. It often surprises people when I tell them I never graduated, in fact I never studied design.

Early in my design career, I remember being refused an interview by one of the top agencies because I didn't have a degree. I'll never forget that and despite it feeling like a setback at the time, it only encouraged me to keep working harder.



 INFO

Location: Norwich, UK

Established: 2001

Expertise: UI design, UX design

Awards: Site of the Day Awwward, Site of the day The CSS Awards, People's Lovie Award, CreativePool Best App Award

► Talk us through your career so far.

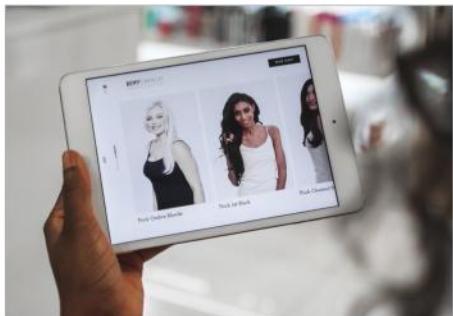
I think being a designer was always inevitable, I just sidetracked a little after high school when I started up a successful software distribution and publishing company, importing and exporting software globally. I was trading for about three years until a market collapse saw me out of work. Certain duties of running that business were designing magazine adverts and CD cover art, and as much as I enjoyed this part of the job it still didn't resonate with me at this point that this was where my career was heading. It was about a year later some friends of mine were designing club promotion flyers, posters and small websites and I started turning up at their office and playing around with Photoshop. That's where it started; I stocked up on design and front-end development books and taught myself over the next few years.

In 2001 I tried my luck and sent out emails to as many local agencies as I could find, and shortly after was offered a junior role at the hugely reputable Maynard Malone. I owe so much to them for giving me that opportunity and learnt so much.

Throughout my career I've had various freelance stints, worked at various agencies, I've even worked at places such as Virgin Wines as the head of design and more recently I spent two years as the creative director of a local agency until I left in 2015 to return to freelancing.

How would you describe your current line of work?

Varied. Though I dabble in branding, photography and video for startups, I mostly focus on UX/UI projects. These



Rich worked on an in-store shopping assistant app for hair brand Remy Capillus



Despite never studying design, Rich has held a huge range of roles including head of design at Virgin Wines. He left that job in 2015 to go freelance and has never looked back

projects tend to be hugely varied. In the last two years I've worked on incredible projects ranging from a launch campaign for Beyoncé's Ivy Park, a hub for residence of a new smart city in Doha, an in-store shopping assistant app for US-based hair brand Remy Capillus, a rebrand and reshape of the cross-cultural training tool Country Navigator, a new usage app for one of Belgium's top telecom businesses and a new social media platform for the adult sex toy industry, to name a few.

What have you been working on recently?

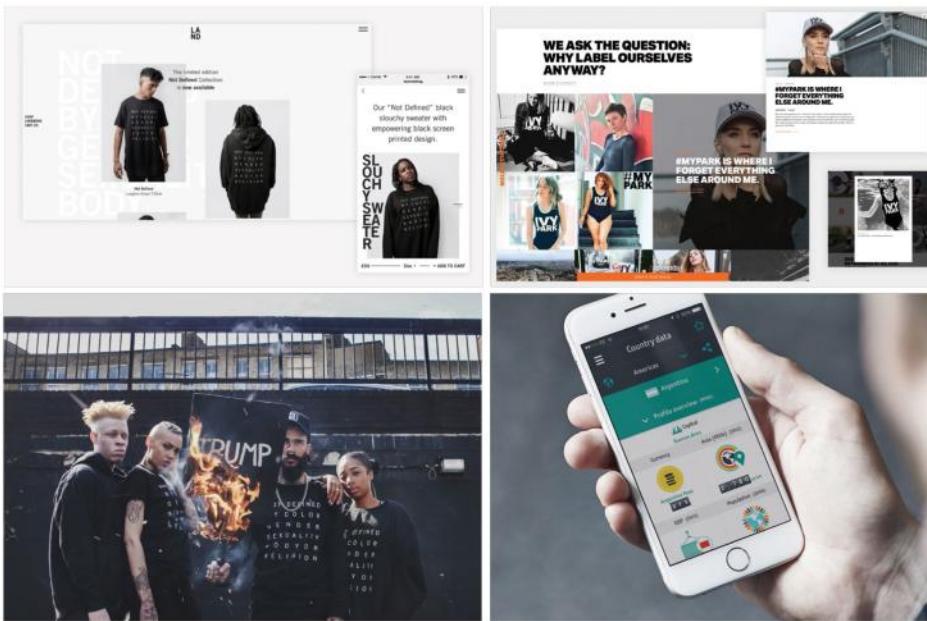
I recently spent a couple of weeks in the beautiful little Belgian town of Mechelen working with a fantastic UX team at Brilliant Basics (www.brilliantbasics.com).

I was contracted to visualise the UI on a new usage app for a top telecoms company. I can't give too much away about the project at this stage due to confidentiality, but we were exploring innovative ways of interacting with the user dashboard and data visualisation of the multi-user usage. I mostly work remotely, which usually calls for a waterfall approach, but working in-house in a truly agile environment is always a challenging, rewarding experience. Making that transition from contracting remotely

to working within a big company on agile projects is always an exciting prospect, understanding the collaborative working style and working effectively within a design team.

You've worked with Beyoncé's fashion line, Ivy Park (www.ivypark.com); tell us a bit about that.

Probably my favourite project of my career. I got a call out of the blue from Zalando on a Friday afternoon asking if I wanted to fly out to Berlin on the Sunday for a couple of weeks, they couldn't even tell me who the project was for until I had signed an NDA. Flights and expenses paid, they put me up in this incredible nhow hotel for two weeks... the moment I arrived in the hotel I met Jack Garratt who I shamelessly grabbed a quick selfie with, then for a few days I kept seeing Richard Ayoade at breakfast. The role was originally to visualise conceptual ideas and storyboard interactions in-house at Zalando for the launch campaign of Ivy Park. A couple of days later we met with B-Reel who were the studio assigned to the project, and it made more sense during my second week to work with the B-Reel team at their studio. It was an amazing experience, such a wonderful group of people to work with



Rich's work has taken him around the globe. He also spent seven months living and freelancing in Barcelona, which in turn opened up new opportunities across Europe.

and incredibly talented. It was a fast-paced agile environment, we were working up prototypes on the fly then redesigning new ideas to retest. The campaign challenged users in Europe to join the #MYPARK movement by sharing their park, ie, their image on social media.

You designed a site for a smart city in Qatar; what did that involve?

Three visits to Doha, huge board meetings, lavish hotels and extreme heat. Msheireb Properties were (and probably still are) building this new downtown smart city and required a residence portal where you can pay bills and order services as well as find tourism information and book amenities. I was contracted by WMP who were working with Orange for Msheireb, so there were a lot of people involved, [which] made for interesting meetings. I actually got to visit the site and it was incredible to see the structures being erected.

One of your clients was a Hollywood director; how did that come about?

I totally geeked out on this project! I received an email from Michael Steinberg asking to arrange a Skype call in reference to his website refresh. I recognised the name and looked him up to find he was a

Hollywood movie producer, writer and director. We got talking about the industry, movies he's worked on and his experience working with Quentin Tarantino (who he called QT) which was hyper-surreal.

You won awards for your work on the World in Figures app for The Economist.

During my time as creative director at Soak, the team won the People's Lovie award for best app design and Best of Application Gold Award from Creative Pool. The app itself (worldinfigures.com) gives the user access to over 100 country ranking indices covering everything from agriculture, business and education to health, population and transport.

We had a great team of people working on it. I was designated to the UI and transforming the wireframes into a beautiful user interface, taking into consideration the dense content and finding a way to display this information in a fun and clean presentation.

As a freelancer you once upped sticks to Barcelona for seven months; would you recommend such an adventure?

100%. When you choose to put yourself in a position outside of your comfort zone you have to force your own hand, you have to

SPOTLIGHT

RICH BROWN

What's on your desktop today?

I tend to keep it tidy. MacBook, Cinema Display, mug of tea and a J Dilla vinyl figure.

Little things that make your life worthwhile

Websites: Pitchfork, Little White Lies, Awwwards
 Apps: Instagram, Deliveroo, Netflix
 Audio: Spotify, Sonos, BeoPlay E8s.

What do you have on the walls?

Mostly my own photography, a framed edition of U&LC, a portrait by Designchapel and an illustration of David Bowie by local artist, Lacey Law.

What will you do for lunch?

I usually hit the gym at lunch times and then tuck into leftovers from the previous night's dinner.

What hours do you work?

I've been known to work 18hr days and weekends in the past, but now I'm married I try to keep to regular office hours. I believe if you regularly work overtime then you're unable to manage your days with any real expectations of what's manageable or achievable.

What else do you do in the office?

I have a small photographic studio setup so I dabble in photographic work. I often just sit listening to music, editing photos or designing t-shirt ideas for my clothing brand.





★ TIMELINE

Key dates for Rich Brown

MAY 2001

Successfully landed a junior role with Maynard Malone.

MARCH 2008

Set up as a freelance designer.

APRIL 2009

Work featured in various award sites, magazines and publications.

JUNE 2012

Spent seven months in Barcelona with just his laptop.

JANUARY 2013

Chosen to be on the Awwwards jury.

OCTOBER 2013

Hired for the creative director position at Soak Digital.

OCTOBER 2015

Worked with Zalando and B-Reel for Beyoncé's Ivy Park in Berlin.

DECEMBER 2016

Chosen to be on The CSS Design jury.

MARCH 2017

Started a clothing company, exhibited as part of Fashion Week.

SEPTEMBER 2017

Awarded Site of the Day on Awwwards.



In his downtime, Rich enjoys experimenting with photography. He even has a small studio set up in his office

► make things happen, be inspired. I literally packed up my laptop and a suitcase and stayed in an apartment at Plaça Reial. I was still working with my clients from the UK, but I connected with a couple of agencies out there and once it became apparent I was in Barcelona, I started to get approached by new potential clients in Europe, so it really opened doors to new clients around the globe.

What do you get up to when you're not working?

I like to switch off, but when I'm feeling creative, photography is one of my biggest passions. Travel street photography is what I really love, but of course it's not every day you have those opportunities.

I've set up a small studio in my office so I'm able to shoot studio portraits for friends and a few local businesses and bands. I've also set up my own clothing brand, Land Clothing, so I spend a lot of time generating publicity for that, arranging shoots, taking photos and designing new apparel.

What do you think are the big challenges facing UX and UI?

Keeping on top of technologies and software. Designers don't just design any

more, we're designing experiences and the UX to UI process is an extensive one consisting of research, reporting, planning, prototyping, agile development, user testing and analytics. The rapid change in technologies and devices require the need to adapt our tools and processes; this is an industry that needs to be innovative and fast, we have to keep moving. The market has exploded with new tools, so we need to be as inventive and efficient as possible, but there's also a need to know those tools and be fluent enough to interchange them depending on which agency you're working with.

What advice do you wish you'd been given when you were starting out?

Always surround yourself with people who are smarter than you and you will always be learning and improving. If there's something you want to do, pursue it!

Accept that 75% of what you do in life probably won't work out how you'd expect, but if you look at everything as an experience, either it's positive or you learn and move on. I've spent a lot of my early life procrastinating, but being decisive is when things start to happen. I don't think I regret any decision I've made in life, everything has led to something else. ■

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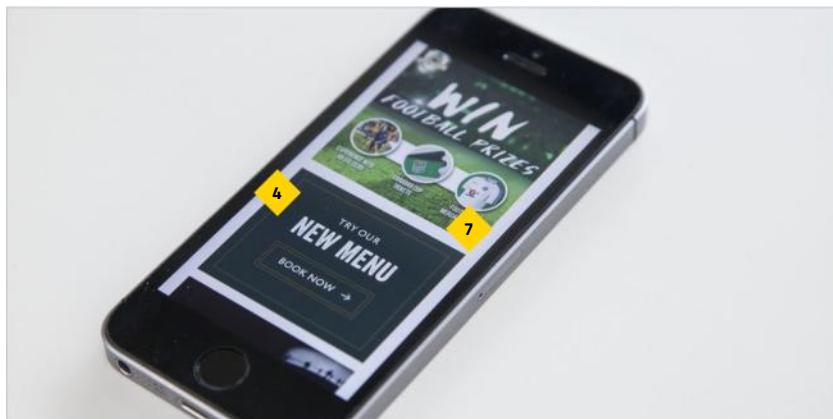
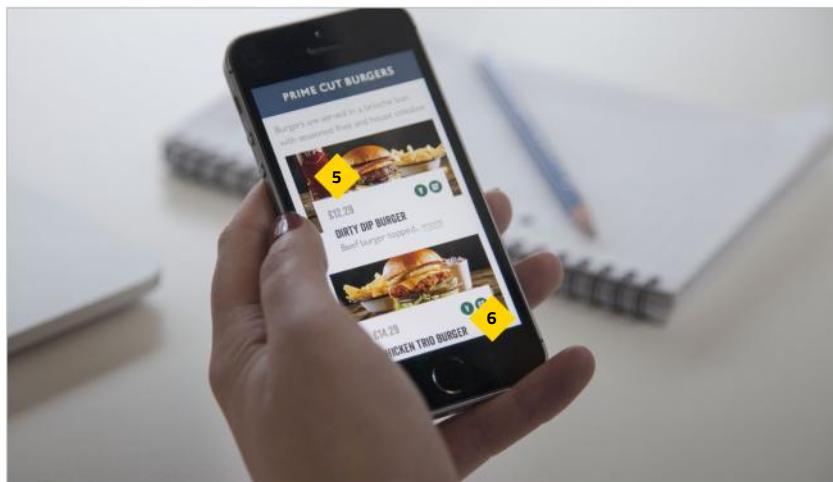
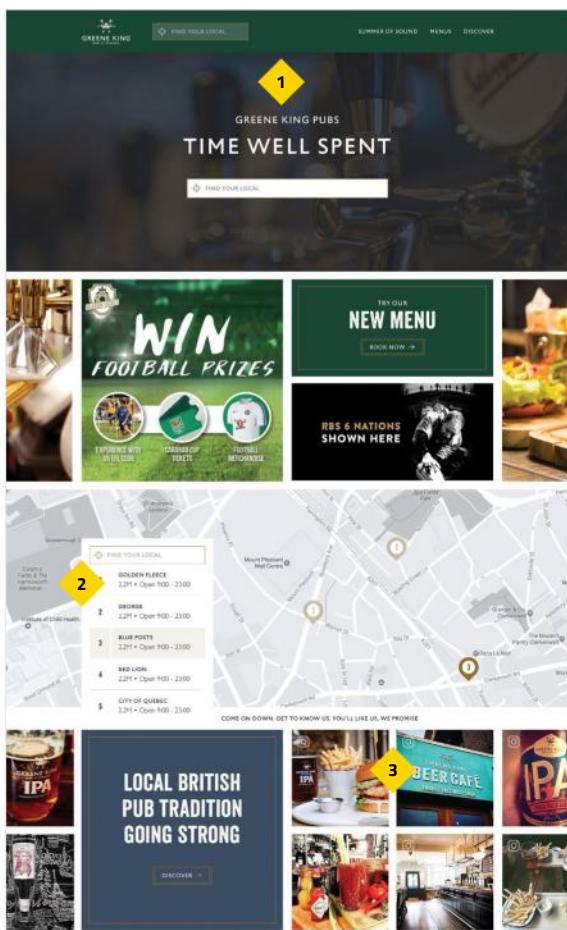
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★ HOW WE BUILT

GREENE KING PUBS

Fancy a pint? The Zone team explain how it created a directory of local pubs for the UK's biggest brewer



BRIEF

As part of a major online rejuvenation project, Greene King, the UK's leading pub retailer and brewer, needed a directory of all its pubs so that customers could easily find a nearby local instantly, wherever they might be.

CLOSE UP

(1) The homepage is simple, designed to direct the user to their local venue. The flexible grid enables Greene King to change promotions when needed. **(2)** Using IP addresses, a guest's nearest venue appears on the site on arrival and then, via the Google Places API, accurate search results are provided. **(3)** Customisable brand content is visible using the virtual content system. **(4)**

Bespoke menu data is pulled into the website per brand for the optimum mobile experience.

(5) Data is integrated through Greene King's menu systems, so prices and product information can be updated from a central source. **(6)** Filterable dietary requirements enable the user to filter menu choices. **(7)** The responsive grid enables key promotional items to make an impact on mobile.

**CALLUM
SMITH**



Responsible for programme management & client relationship.
w: www.linkedin.com/in/callum-smith-1115672b/

**NIS
BJORN**



Creative lead on the project, responsible for the overall user experience on the site.
t: @nisbjorn

**PETER
BRIDGER**



Responsible for technical requirements capture, planning, and leading development teams.
t: @peterbridger

> With over 200 years of history and 44,000 employees in over 3,000 pubs, restaurants and hotels nationwide, plus retail brands like Hungry Horse, Chef & Brewer and Farmhouse Inns, Greene King is the UK's leading pub retailer and brewer.

As part of a major online overhaul, it partnered with Zone (zonedigital.com) to provide a vital service: a comprehensive directory of all its local pubs (www.greeneking-pubs.co.uk). We spoke to the Zone team to find out more.

Zone has been working with Greene King for a while; what's the background to this latest project?

CS: We've been working with them since 2015, on an ambitious rejuvenation of the brand's online real-estate. Up until now that's meant overhauling the Greene King corporate site. The new, consumer-facing 'Locals' site is the latest chapter in that ongoing digital regeneration story, creating a consistent brand experience across their portfolio, whilst also providing them with the tech to solve their internal challenges along the way.

Can you talk us through your UX research process?

NB: We knew that guests needed to find the establishments, see what they have to offer, and get updates on events and campaigns. Further surveys helped us understand who the guests are, and what their priorities are.

With internal Greene King teams, we carried out stakeholder interviews,

participatory design studio workshops, tech analysis of their data capacity and existing systems plus field study.

Ultimately, we're not creating the final user experience for Greene King, but a set of tools and solid technology foundation so they can do that themselves.

And how did your research feed through into the site design?

NB: Our research helped us gain a better understanding of [the] Greene King stakeholders' business needs and helped guide us to sketch out profiles of their customers. On any project, we don't stop at the end user... we connect the dots between business process and service interactions. From our research and development, we were able to create a set of experience principles tailored to each of the company's brands.

Having a great understanding of the business and a starting set of customer portraits meant we could create a robust set of tools for Greene King that enabled them to deliver a branded experience to their customers.

The directory covers 600 pubs; how did you manage all this information?

PB: We integrated the Greene King data feeds for pub information so simple updates, like a change of opening hours or menu pricing, can occur automatically, without a CMS editor.

We also created a virtual content system for Greene King, allowing for a single page of content to be displayed across multiple pubs. A powerful



*TIMELINE

Significant dates in the Greene King site

OCTOBER 2016

Official appointment of Zone after the pitch process.

NOVEMBER 2016

Stakeholder interviews commence to get an understanding of the challenges and objectives for the project.

DECEMBER 2016

Persona landscape created to map the audiences for each brand, helping Zone to understand the specific needs of Greene King's guests.

FEBRUARY – MARCH 2017

Sketch workshop and proof of concept created to agree the process of adding virtual content within Umbraco.

APRIL – MAY 2017

Creation of visual design kit starts with best practice pages created for Greene King pubs to present across the Greene King business.

JUNE 2017

First development sprints start on building the CMS.

JULY 2017

Integration work streams starts, implementing the new database and micro services architecture.

SEPTEMBER 2017

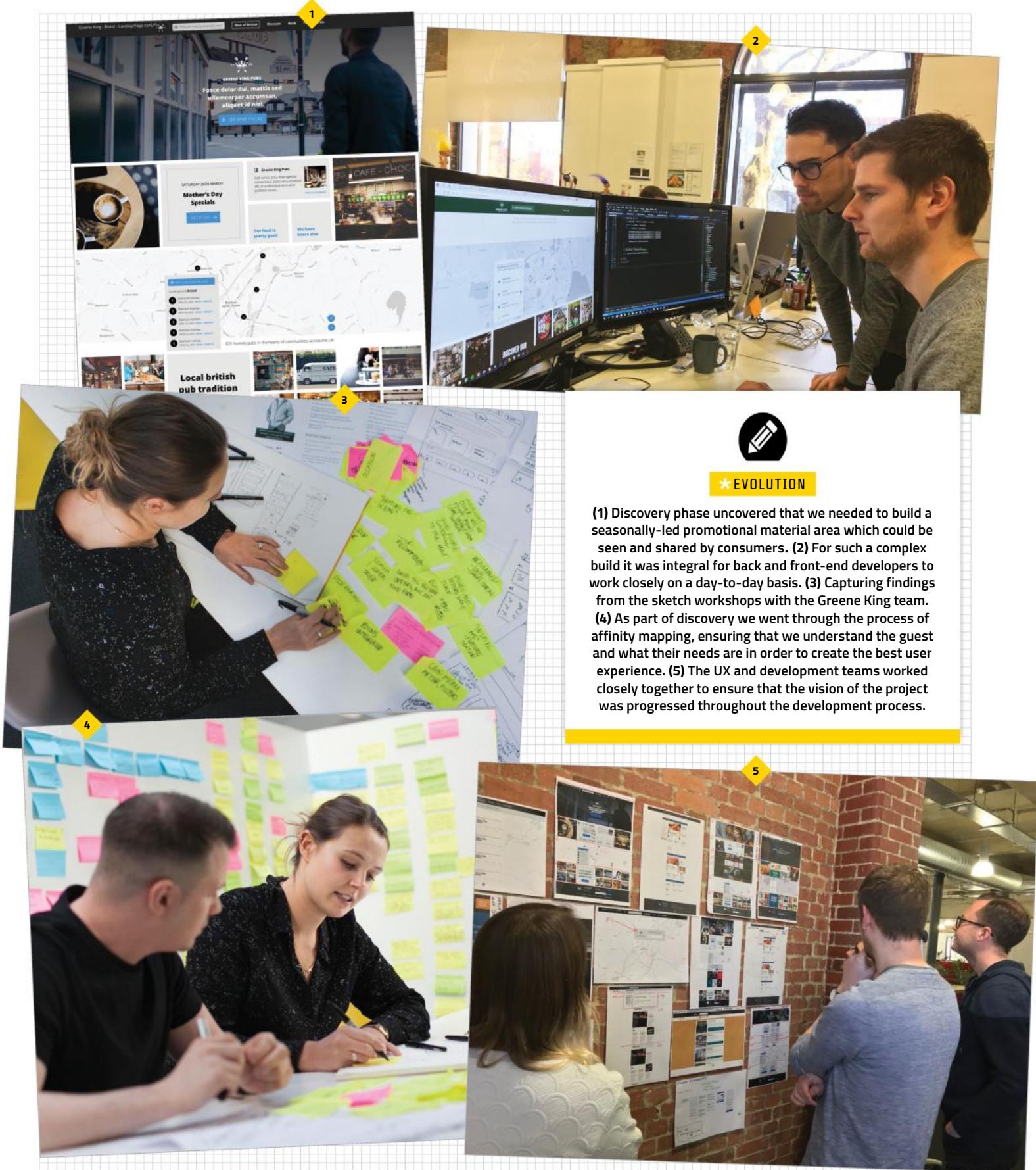
Client sign-off and the start of building the content for initial pub pages using virtual content.

OCTOBER 2017

Greene King Pubs website goes live to guests for over 600 venues.

SHOWCASE

How we built



- filtering system allows the page to only appear on specific pubs combined with tokenisation, to automatically personalise content with relevant pub-specific information.

The build itself was incredibly complex; what challenges did you face?

PB: We chose to use a microservices architecture for certain parts of the platform that allowed the development to proceed with minimal blockers or dependencies.

CS: I think initially the biggest challenge was getting our heads around the toolbox element of the website and how that integrated with the virtual content system. When designing each module, we needed to make sure that it could be used absolutely everywhere. There's not one set module for one set page – you can utilise every part of the toolkit on any page of the site.

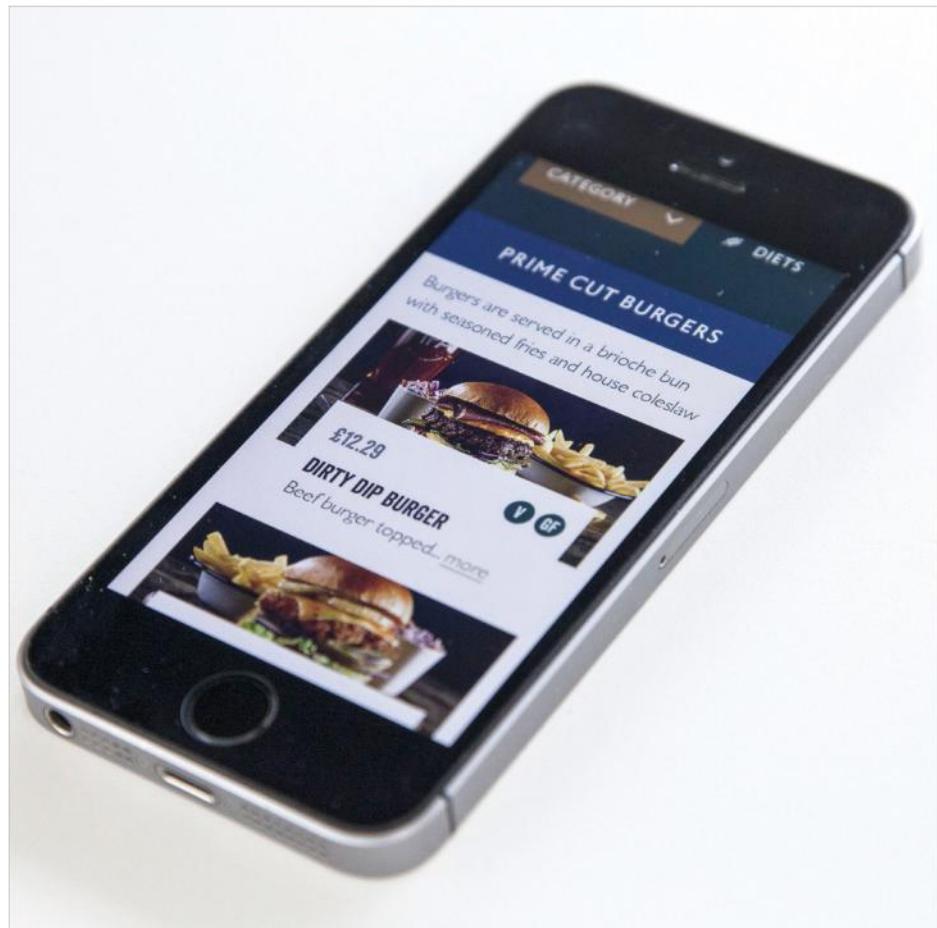
The site's designed so that Greene King can expand it when needed; how did you accommodate this?

PB: From the start we designed the platform to operate as a series of responsively designed modules, which could be combined in different combinations on different pages and reskinned through themes in order to ensure that each brand site would have a distinctive identity.

Within Umbraco we've made heavy use of nested content in order to allow CMS editors a friendly and flexible experience of picking and configuring modules. Any additional modules can be developed using this established pipeline, which provides us a straightforward development process and Greene King with a standard CMS editing experience.

What technologies are running the site?

PB: The core is Umbraco, which gave a proven CMS to build on. This provided us with a good development and release workflow along with Umbraco Forms, which spared us from any bespoke form development. We've used Webpack to manage our build pipeline as well as Yarn to keep dependencies locked down and installed quickly. Sass is used extensively



Food information Pub listings include food menus so you don't have to drink on an empty stomach

to allow us to maintain a brand-able, componentised style kit.

The 'pub finder' and the 'pub menu' make use of Webpack's dynamic imports to ensure we only download them when needed. The pub finder uses Google Maps and the Places API for autocompletion, with the pub menu being built as a Single Page Web application (SPA) and uses React, Redux and React Router.

How did the testing process pan out? Did it uncover any major issues?

PB: At Zone we always ensure that we test against the browsers and devices in use at the moment. CrossBrowserTesting proved invaluable, along with using physical in-house devices.

Along with the browser-based testing we had to ensure that the logic used to drive the virtual content system worked

correctly for the variety of ways it could be configured. We used unit tests for parts of the system that were developed in isolation; this gave us high confidence when it came to integrate them.

What lessons have you learned during this build?

CS: How effective the toolkit approach was. We have previously created modular websites, which were fairly rigid in structure, but this build provided Greene King with full flexibility and scalability for all of their brands.

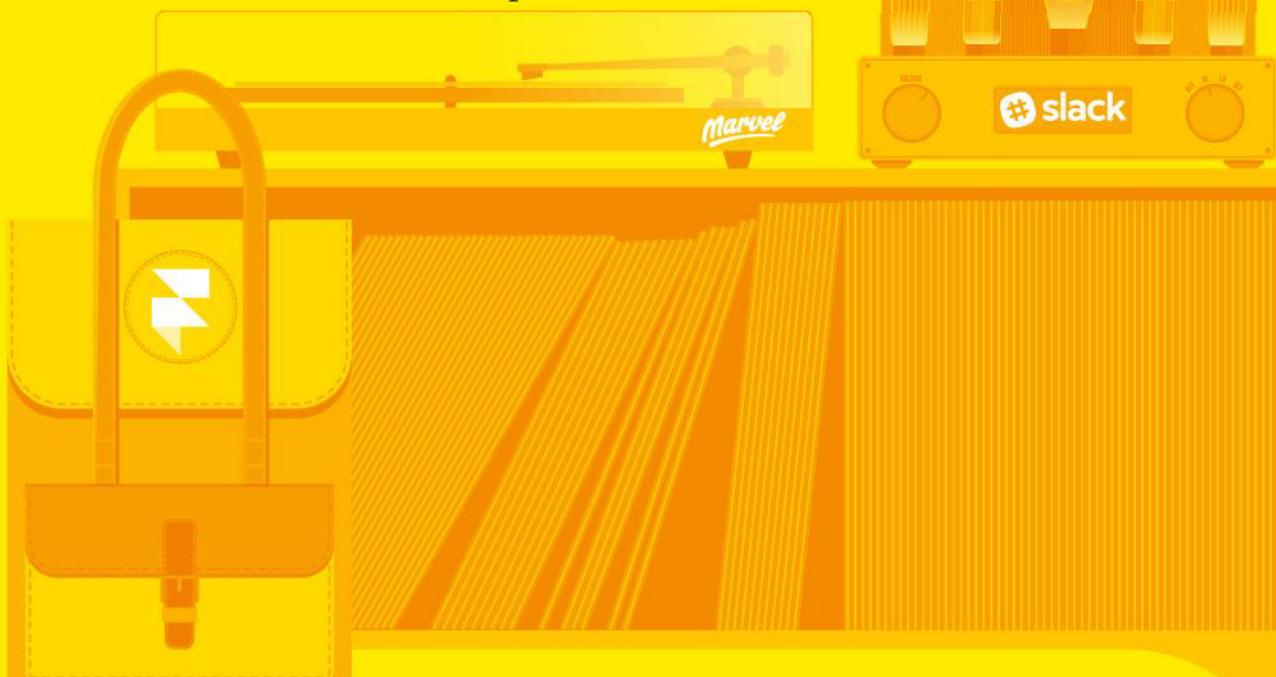
How has the site been received?

CS: Really positively to date, even though it's early days. Greene King's general managers appreciate the level of detail on their pub pages, from specific opening times to bespoke menus. ■

THE COMPLETE DESIGN TOOLKIT

THE PRO'S GUIDE TO THE BEST TOOLS IN WEB AND UI DESIGN

Rachael Grocott, product designer at London-based agency UVD, explores how the wealth of tools available to designers today can improve our workflow and help us to create better products

 **AUTHOR****RACHAEL GROCOTT**

Rachael is a product designer at UVD: a digital product, web and UX agency based in London.

@rachaelgrocott



The complete design toolkit

FEATURES

The complete design toolkit

In the early days of the web, a designer's toolkit was on the lean side. Other than the tools offered by the big players, options were pretty limited. More often than not, a design was created in Photoshop, sliced up in Fireworks and dropped into tables in Dreamweaver. This meant that it was very hard to achieve what you might have wanted to create on the web, as the tools didn't exist at the time.

Adobe and Macromedia's monopoly of the market continued until 7 September 2010, when a new player entered the market: Sketch.

Sketch simplified the way we design for the web by providing a dedicated product that not only worked well, but was really easy to use. It seemed only natural then, that with a dedicated tool to design for the web, we needed a dedicated tool for prototyping – and this is where new tools really appeared in a surge.

Now there's a tool to improve every aspect of product design, enabling us to not only create better products, but also work better. Team communication is stronger than ever before, with designers embedded in cross functional teams rather than working in silos. As an agency we can work with clients anywhere in the world and also have our staff anywhere. We're very fortunate to have all of this help at our fingertips, but there's also a lot of choice. While this is no definitive list, the tools listed here should stand you in good stead to create great digital products, as well as harbouring close working relationships with both your team and your clients.

Research

Airtable

» <https://airtable.com>

This is like Excel or Google Sheets, but it can do much more. You can attach documents to the cells, such as recordings or images, which makes this a great place to collate feedback from user research sessions. The ability to add 'tags' makes it really easy to digest large data sets and spot popular themes.

It's as simple as creating a spreadsheet, tweaking the fields to be relevant to your input, and then to share all you need to do is send the link. Clients love it, and so will your colleagues.

Another way to use Airtable is by switching the view to 'gallery' and collating design inspiration. It's easier to use than Pinterest and there's no barrier to entry or log in. Plus, you can attach GIFs, and who doesn't love a GIF.

Branding/colour palette

If you're working on a greenfield product, then the chances are you'll be doing a lot of competitor research and design research. WhatFont (<http://whatfontapp.com>) is great when you love a font and need to know what it is – with the Chrome plugin you open the app, click on the text you like and it'll tell you the font used, weight and size.

And if you need some colour palette inspiration, then Coolers (<https://coolers.co>) always helps. Plus it's super addictive pressing the spacebar for new palettes.

Styleguide

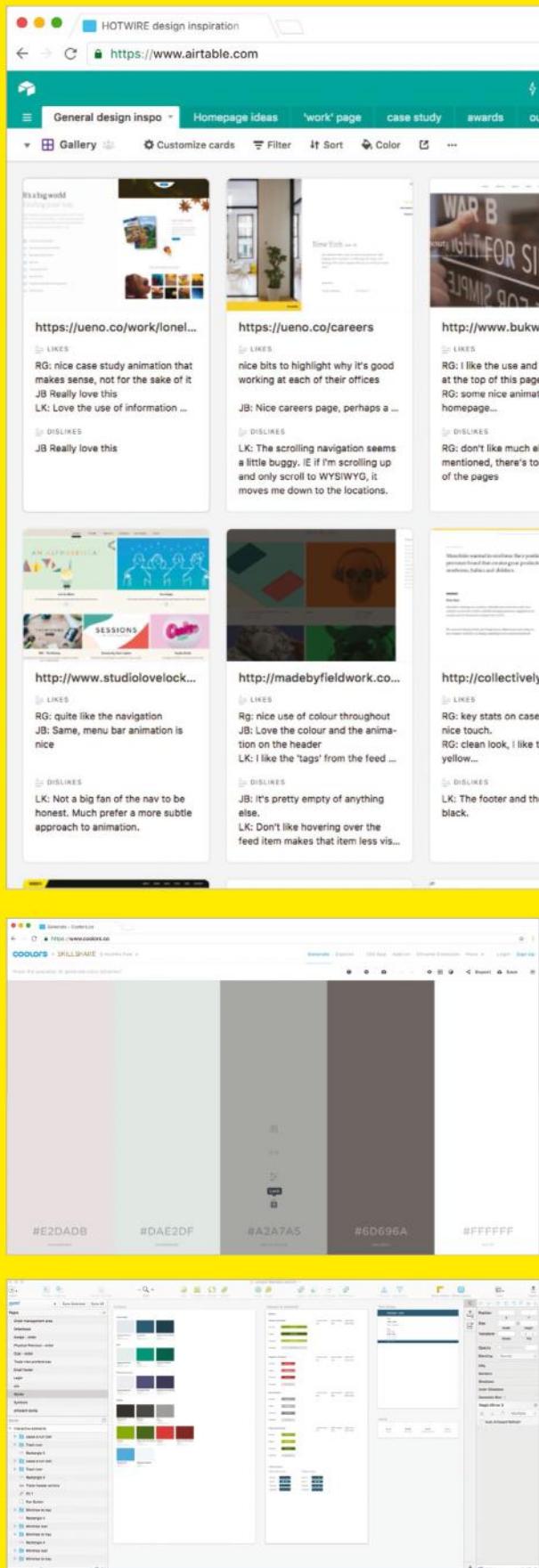
Creating a styleguide is a great way to maintain consistency in your product even if you're not working on a greenfield product. If you're working on a large product then it's a great way to document the typography styles, colour palette and input styles. It will not only help with your own sanity, but it's a perfect way to bridge the gap between designers and developers, as they can refer back to this to sense check what they've built.

You can use Sketch to create a styleguide and it'll do a lot of the work for you by pulling in your colours and fonts. Another option is to use a more specific tool such as Zeplin (<https://zeplin.io>). If you also use this for design handoff, then this may be a tool your developers feel more comfortable using.

Understanding and gathering requirements

Post-it notes:

Every studio needs them. In the early days of scoping out a new product or feature, use Post-its. Being paper based means there's no barrier to generating



The complete design toolkit

HOTWIRE design inspiration •

people thought leadership careers contact page footer regional offices navigation SHARE

https://www.sequence.co.... RG: really like the case study layout/format

https://comotion.studio/ RG: nice use of space and typography

https://www.uber.design/... RG: nice case study - particularly the top half... JB: Love this, feels quite sharp and modern, good use of imagery and...

JB: I think the format looks good, but it's far too long and drawn out. Also, our case studies will have less imagery...

https://youngandhyperact... RG: interesting thought leading their case s

https://w RG: can get weird with the mini nav halfway down

JB: Not sure I like any of this. Italics use is nasty. Imagery is not too bad I guess.

LK: Large b



Left Airtable's gallery view is great for collating and sharing design inspiration with your clients

Below Using Airtable to collate and share user research with our team and clients

Far left middle Coolers' colour palette generator. You can 'lock' colours until you find a palette you're happy with

Far left bottom Using Sketch to create a styleguide. Sketch pulls in your colours and text styles, and artboards are used to group elements together

HOW WEB TOOLS HELPED BUILD HOTWIRE'S SITE

Working in collaboration with distributed stakeholders to deliver a standout website for a global communications agency

When designing a new website for global communications agency Hotwire, the team had to work closely with Hotwire's design teams in New York and San Francisco. Whereas once this might have been impossible, a positive attitude towards remote working and new tools meant that everyone felt part of the same team.

After carrying out customer research on Hotwire's new intended target audience, all data was collated using Airtable. The team entered their notes from the interviews, tagged common themes and uploaded the recordings. This meant that the invaluable data could be quickly and easily distributed among the project stakeholders at Hotwire in a way that was really easy to digest.

During the design phase of the project, Realtime Board was used to collaborate on early sketches. As Hotwire was working on a complete brand overhaul, it was essential it had input early in the design direction of the pages. Once wireframes were signed off, final designs were shared using InVision, which built up over the project timespan to create a detailed prototype of the website. For more interaction-heavy prototypes, such as when a user opens the menu, Origami was used.

With both teams being able to work in collaboration in the early stages of the project, and by sharing early prototypes of the pages and interactions, the result was a successful website that was turned around in six months from pitch to go live.

SKETCHING OUT EARLY THOUGHTS FOR YOUR PRODUCT OR FEATURE WITH YOUR TEAM IS A QUICK WAY TO GENERATE LOTS OF IDEAS

ideas. Give everyone a stack and a pen and encourage them to scribble down their thoughts. They're tactile; you can move them around, group them together, colour code ideas, and it's also pretty satisfying to scrunch up a bad idea.

● Magic Whiteboard

» www.magicwhiteboard.co.uk

If you need to travel to your clients' offices for a requirements gathering workshop, you need Magic Whiteboard. It sticks to any surface to create a portable whiteboard, and also keeps all of your Post-it notes in place, easy for you to transport back to the studio.

Wireframing

Pen, paper and sticky dots

All great ideas start with the humble combination of pen and paper, and there's no reason to think digital products should be an exception. Taking inspiration from Google Venture's Design Sprint process (www.gv.com/sprint), sketching out early thoughts for your product or feature with your team and clients is a quick way to generate lots of ideas and get early feedback. The idea is to create quick, rough wireframes so that no one is precious about what it is they have drawn, and including



FEATURES

The complete design toolkit

GET IN THE HABIT OF PROTOTYPING

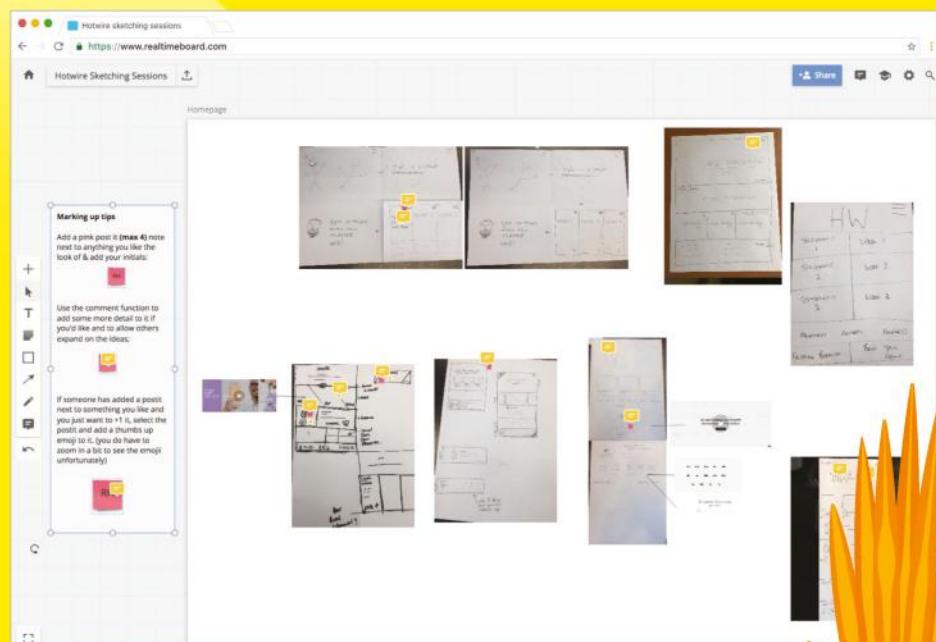
Using prototyping tools to test new ideas and complex features on end users

When designing a new website or digital product, it's always important to test your solutions on end users as soon as possible. Thankfully, there are now lots of prototyping tools available to make this look and feel almost the same as real software.

If you're creating a website, Marvel or InVision link up your pages using 'hotspots' and will give your end users a real feel for how the website will work, meaning you can test your user journey quickly, long before any code has been written. If you're looking to lift an interface with movement, Facebook created a tool called Origami, which can be picked up quickly and enable you to have something mocked up within an hour.

If you need to test a complex feature, it's best to identify these early and use Framer for everything; from design to prototyping. The interface is like that of Sketch, which makes designing in the app feel familiar. But building your prototypes takes a little more time as Framer uses CoffeeScript: a programming language that transpiles into JavaScript. This may be easy for people to pick up who have some coding knowledge, but it isn't a very transferable skill outside of Framer, which is a shame.

This may seem like a lot of time to spend on prototyping, but it's a fraction of the time compared to implementing a large technical feature into your codebase only to find out that it needs to be changed.



DESIGNING A TABLE ONCE MEANT COPYING AND PASTING ROWS AND ROWS OF TEXT, NOW YOU CAN DESIGN ONE IN AROUND FIVE MINUTES

people from different disciplines brings a wealth of ideas to the table.

Having participants vote (with the sticky dots) on their favourite elements means you can identify the best concepts quickly and it's these that you can mock up into a vanilla wireframe, ready for your first round of user testing.

● Realtime Board

» <https://realtimeboard.com/app>

If you have distributed team members or clients, Realtime Board is a great tool to facilitate a wireframe sketching session remotely. With the app, you can add a photo of your sketch and see where other members' cursors are, which helps when explaining what you've drawn as you can point to the aspect you're talking about.

In place of sticky dots, you can add a note and comment to vote on your favourite solution.

Design

● Sketch

» <https://www.sketchapp.com>

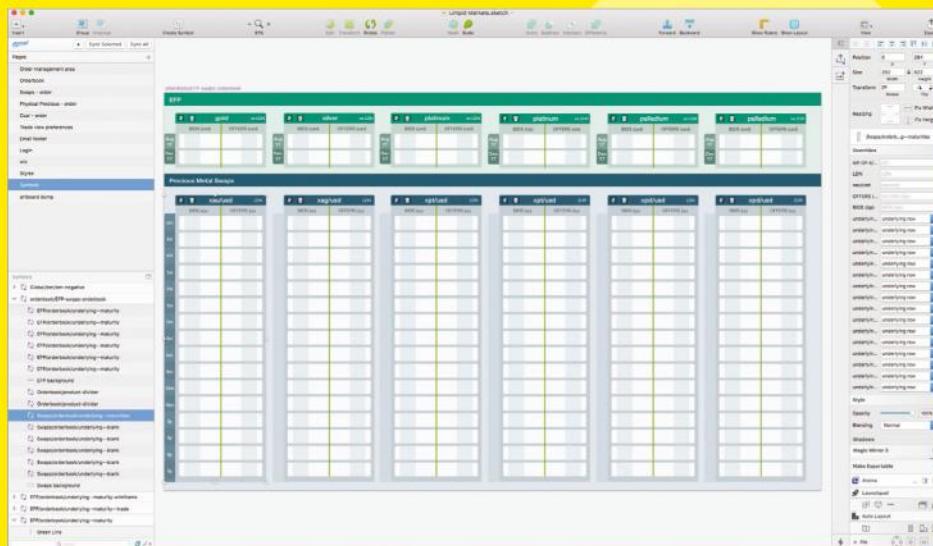
This is a product that keeps getting

better. If you're designing for the web then this is the tool for you, as everything in the app is geared up for web design. One of the best features that have been added are 'symbols', which enable you to create reusable components, as you would on the code side using frameworks such as React. Designing a table once meant copying and pasting rows and rows of text and shapes, now you can design one in around five minutes.

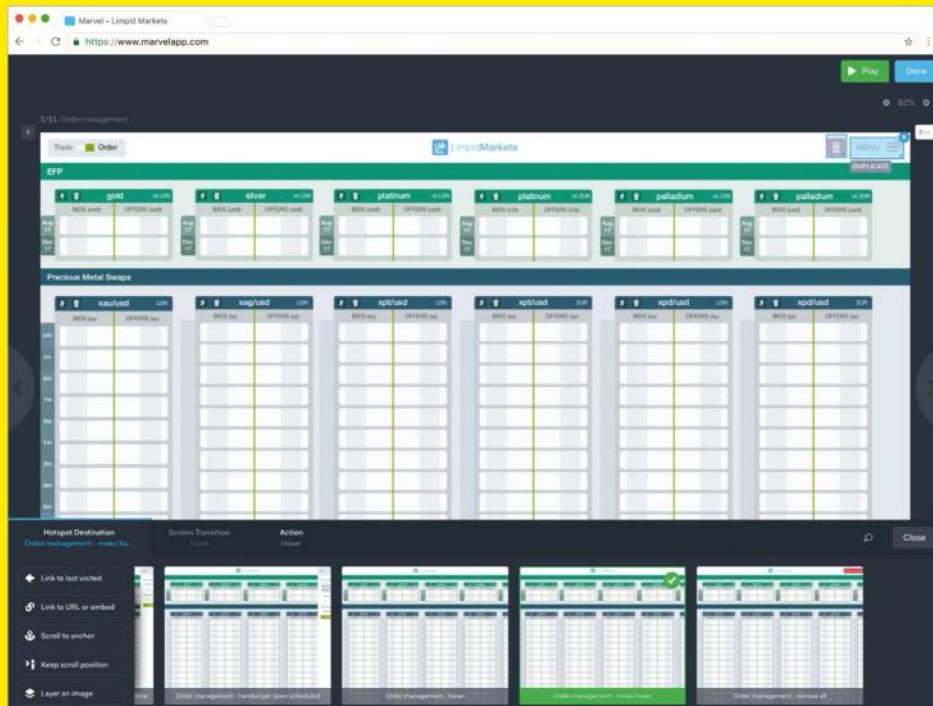
There are also some really useful plugins to enhance Sketch even further. Anima's Launchpad (www.animaapp.com) maintains the padding you give an element inside your symbol, as you would on the frontend. For example, you can create one content tile with an image, title, description and CTA, and no matter the length of the text you override, everything stays neat and tidy.

Interestingly, this isn't what Launchpad was intended for. It's marketed as a tool to publish websites directly from Sketch and design responsively. As always when people are using tools for a different purpose than intended to solve

The complete design toolkit



Far left Using Realtime Board to sketch out wireframes and vote on the best solutions

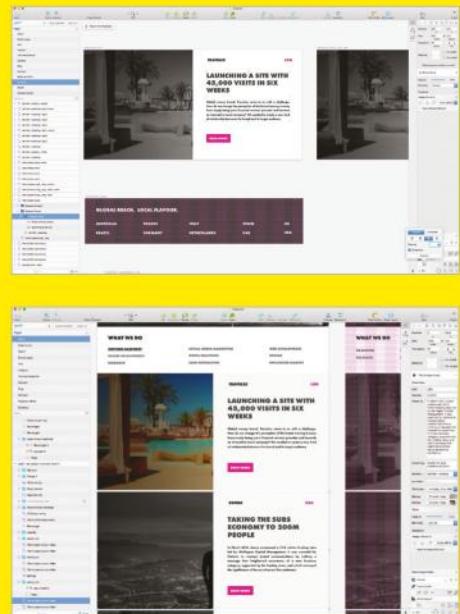


Left Limpid Markets orderbook made up of three symbols duplicated with overrides on the right-hand side

Bottom left Linking up artboards in Marvel to test a new menu concept on end users

Bottom right Using a stacked group to maintain padding of 40px no matter how big the content is

Below Two different case studies using the override function – padding is consistent between the two



has just launched vector editing, so this may be a new contender.

Prototyping

Product validation

InVision

» <https://www.invisionapp.com>

Marvel

» <https://marvelapp.com>

These tools are essential to test your solution on end users. You import your screens then place clickable hotspots over the top of your designs, which you use to link up pages, or change states on hover to mimic working software. To really speed up your workflow, InVision and Marvel have Sketch plugins to import your artboards directly from Sketch.

When testing on end users, the finished effect can look remarkably real, especially if you take the time to add hover effects to buttons as well as

a problem, a bespoke solution is never far away. A new contender for Sketch this year will be InVision's Studio (<https://www.invisionapp.com/studio>), which has responsive design baked right into the product, as well as prototyping. Hopefully it won't try to do too many things and end up being a master of none.

● Photoshop/Illustrator

» <https://www.adobe.com/uk/creativecloud.html>

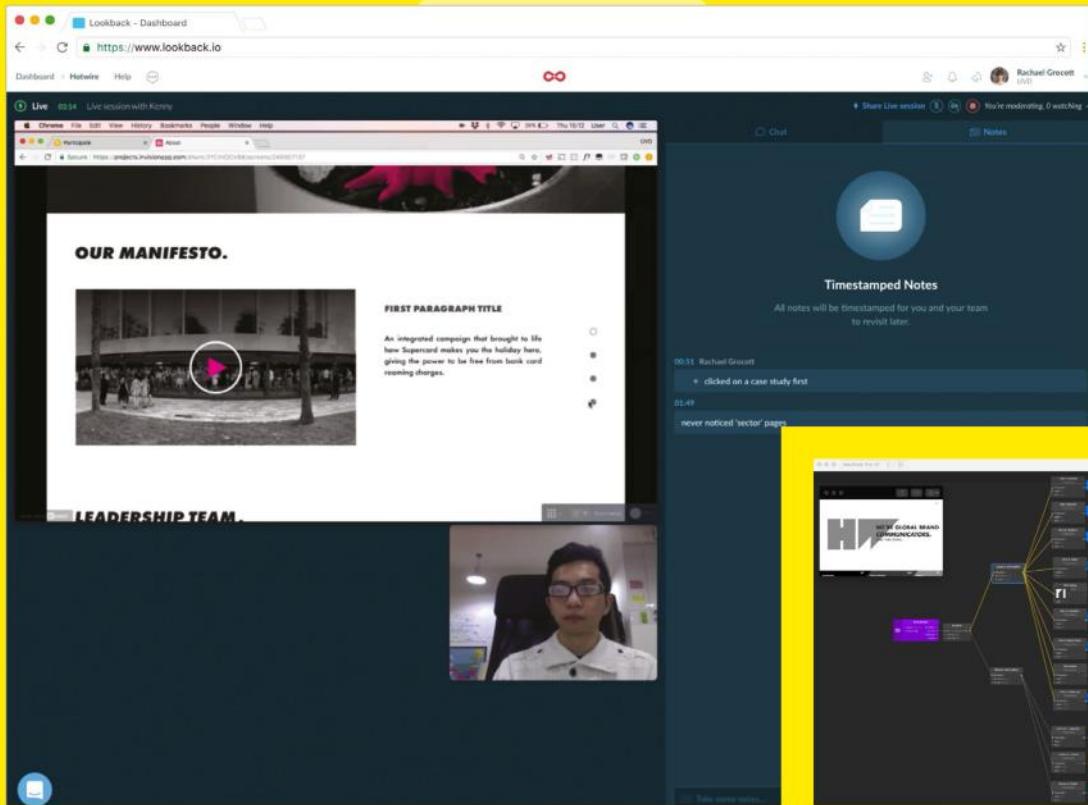
These tools will always be required for

product design, and have been a constant since the beginning. Photoshop is essential for when clients send over huge files that aren't optimised for the web, and there's often some tweaking that's beyond the scope of what Sketch offers for image manipulation.

While it's handy to use icon sets for consistency, it can really lift your design to create your own icons. Illustrator still leads the way when it comes to vector-based software as the vector editing in Sketch still isn't quite as extensive. Figma

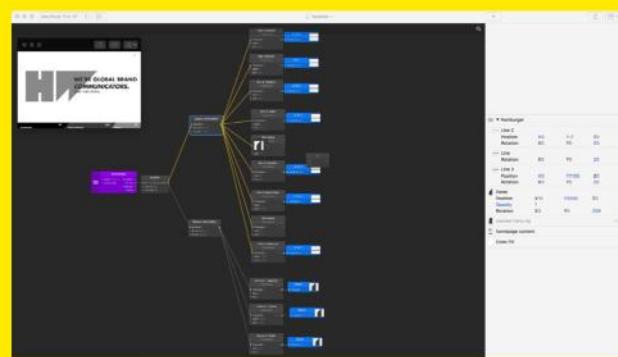
FEATURES

The complete design toolkit



Left Recording a live user testing session using Lookback. Adding timestamped notes to refer back to with client

Below Using Origami to mock up a menu opening animation, as well as a hamburger animation



- clickable areas. This means that you can benefit from valid feedback very quickly, without ever having to bother writing a single line of code.

If you have remote users, InVision has a Live Share feature, which enables you to send out a live link of the prototype and give users control. This means you can watch their behaviour and notice any pain points etc. Unfortunately, InVision has decided to drop this feature early in 2018, but there are alternatives.

● **Lookback**

» <https://lookback.io>

Lookback enables you to test using a URL, such as your InVision or Marvel link, and you can watch what the user is doing in real time. In order for this to work, the user needs to install a browser extension and also enable their camera, microphone and screen share, which could potentially limit the sample you're able to test on. But if you do find that you are able to test this way, Lookback will store all of your sessions to refer back to when actioning any feedback, and it means you can also show your clients real users interacting

with the product, which can often be a real added value.

Interaction

Where once a designer's role ended with static designs, it's now becoming essential to be able to mock up interactions and animations to show not only your clients, but also developers. In the last few years there's been so many tools appear on the market to help with this. Some require coding knowledge, some are timeline based and some you build a step at a time by adding interactions. All are different and all have their benefits, so it's important to know what the tools are capable of and ensure you choose the right one for the solution you want to test.

● **Origami**

» <https://origami.design>

This was built by the team at Facebook and is easy to pick up. While it can do virtually anything, Origami excels at mocking up micro interactions in your product such as opening a menu, or subtle animations used to enhance the UI.

They call it the 'perfect companion to Sketch' as you can copy and paste layers from your Sketch file straight into the app. Once you've pasted everything in, you need to adjust the X and Y coordinates of your assets to get them where you want them on the screen before you animate anything. Then you build up the animation step by step by adding interactions. For example: on tap, turn on an animation that will last 0.3 seconds and will transition an element, which is controlled by entering where the element will be at the end of the animation. So if you wanted to rotate something 45 degrees, you'll add '45' to the 'end' of the transition and link this to the associated X or Y 'rotation'.

● **Framer**

» <https://framer.com>

Framer is probably at the other end of the prototyping spectrum and is a little more advanced, not only because it requires coding knowledge to get started, but also in what you can create. Framer is best to use for interactions that would be impossible to mock up in

tools like InVision or Marvel, such as a search feature. Using a prototype made in Framer, you can include real data, pull up the keyboard and have users input their search terms. This means you can test something that's much closer to what your final product will be.

Framer really comes into its own when you can identify a problem that needs more advanced prototyping and design it first in Framer, then build out your prototype. It has recently launched design mode, which includes responsive design as well as vector editing. This is still very new, but the whole package

YOUR CLIENTS NO LONGER NEED TO BE BASED LOCALLY, SO YOU CAN WORK WITH PEOPLE ANYWHERE IN THE WORLD

could one day be a potential contender to replace Sketch.

Project management

Slack

<https://slack.com>

Slack is a great location to keep all product conversations in one place. It's excellent for teams and clients alike, and the casual nature helps with relationship building. It's also a great tool if you have distributed staff or clients. If you need design feedback you can quickly hop on a Slack call and share your screen.

appear.in

<https://appear.in>

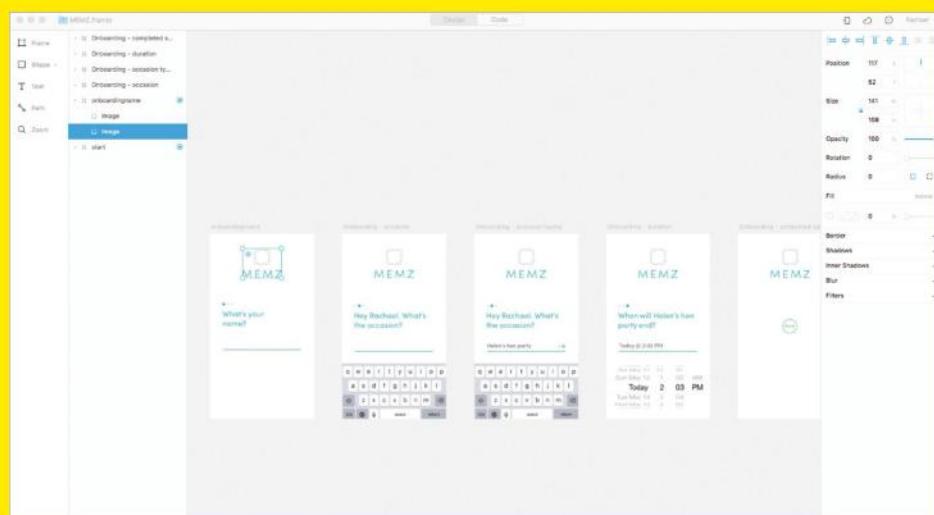
This is a tool that can really impact your business as your clients no longer need to be based locally, so you can work with people anywhere in the world. The app is so easy to use, all you have to do is create a room and then share the link to invite people. The ability to have group calls means that dispersed members can feel part of the same team.

Summary

It's worth mentioning that it's very easy to be paralysed by the wealth of



tools out there, so the best thing to do is understand the basic offering of the tools, sign up and have a play. That way you can see which you prefer and can also make an informed decision when it comes to deciding on the tools that will benefit you the most. Sometimes you won't be the only user of these tools, so it's worth thinking about whether they will appeal to your colleagues and clients. In such an exciting time for the industry as a whole, we're very lucky to be working in this field when we have so many tools dedicated to improving the work we do. ■



Above Framer's design mode is very similar to the Sketch interface

OUR PICK OF THE BEST TOOLS TO START WITH



Airtable

<https://airtable.com>

This is like Excel or Google Sheets, but it can do so much more. Because you can add images, recordings and tags to fields, it's a great tool for collating data on virtually any topic. There are even customisable views to suit your data.

Realtime Board

<https://realtimeboard.com>

This tool is great if you want to collaborate on sketching ideas of early design concepts with distributed teams, as you can quickly upload your sketches with the app for discussion and voting.

InVision and Marvel

<https://www.invisionapp.com>

<https://marvelapp.com>

These tools are essential to test your solution on end users. You import your designs and place clickable hotspots over the top, which you use to link up pages, or change states on hover.

Origami

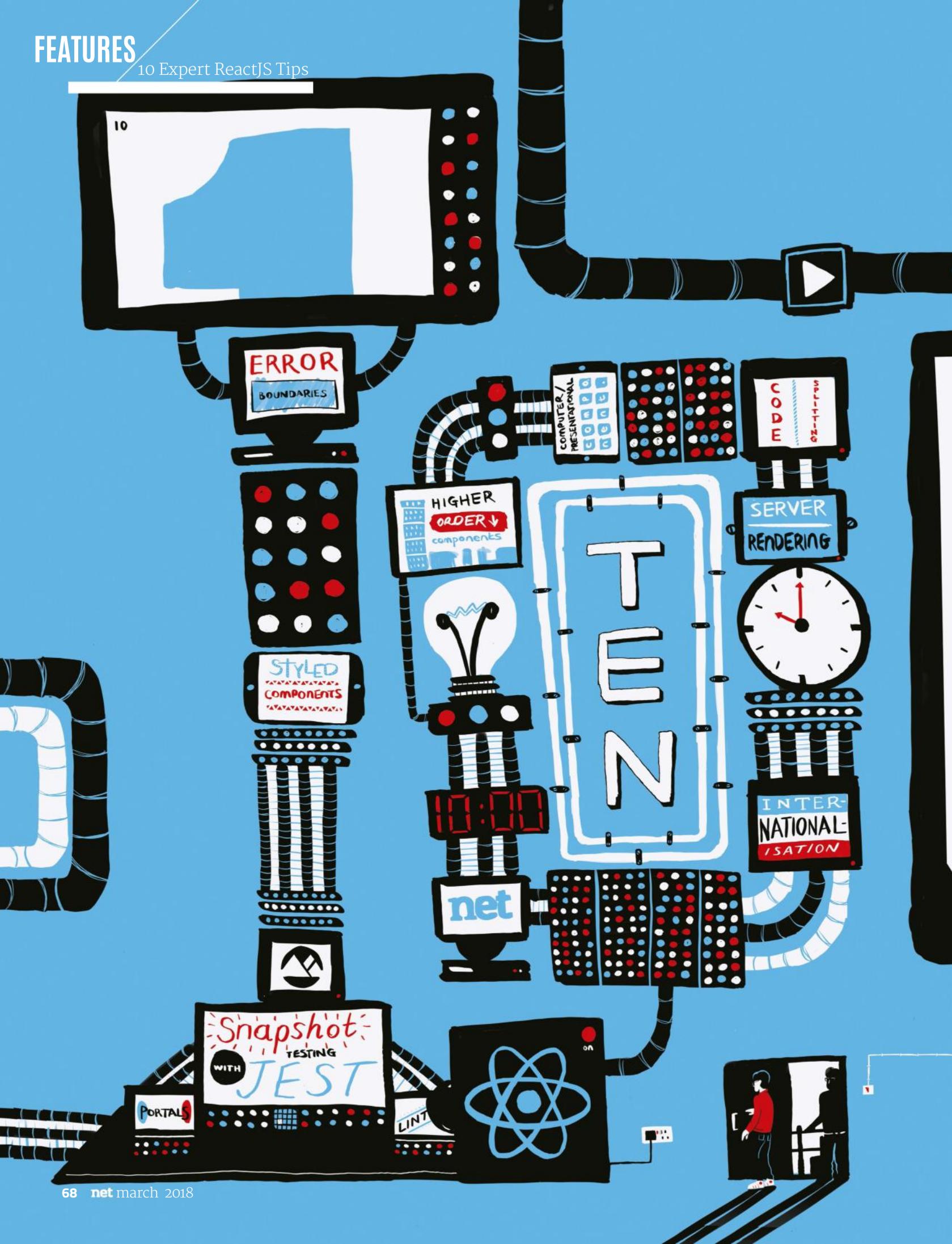
<https://origami.design>

When you need to test any micro interactions in your UI, using Origami can help you prototype something quickly. Assets from your Sketch file can be pasted straight into the app and then you use a combination of patches to create interactions and smooth physics-based animations. Think of it as 'visual programming'.



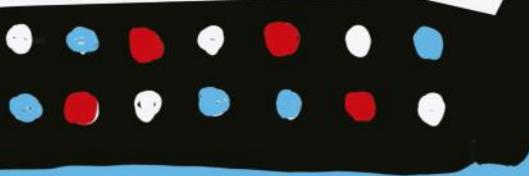
FEATURES

10 Expert ReactJS Tips



EXPERT REACT JS TIPS

Matt Crouch details 10 vital tips and techniques to ease development and ensure you get the best out of the web's most popular JavaScript framework



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Marcus (@MJFainty) is a graphic designer running MJ Faint Design Co. He also works as an art editor on a national film and TV publication. instagram.com/mjfainty

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Higher-order components

Components often share functionality with each other, such as logging or network requests. These can become difficult to maintain as the number using this logic increases. Developers are encouraged to abstract shared code and include it where necessary. In a regular JavaScript application, the concept of a `higher-order` function is one way to approach it. In short, they are functions that take other functions as arguments and impart behaviours onto them. Array methods such as `map` and `filter` are examples of these. Higher-order components (HOCs) are React's way of achieving the same thing. They are components that impart behaviour onto a passed component.

```
const Logger = WrappedComponent => (
  class Logger extends Component {
    componentDidMount() {
      console.log('mounted');
    }
    render() {
      return <WrappedComponent {...this.props} />
    }
  }
);
export default Logger(MyComponent);
```

In this example here, the function returns a new wrapped component, which renders the original one that was passed in alongside any props. HOCs are regular components and can do anything they can, such as passing in their own props and hooking into lifecycle callbacks. The function then wraps the original on export. By using HOCs, it makes commonly used chunks of code easier to maintain and test. When specific functionality is required, they are easy to drop in, safe in the knowledge that it will behave as expected.

Container and presentational components

It is always important to keep a separation of concerns when developing different parts of an application. Where possible, keep the methods of fetching data away from how it is displayed. In

React, a similar concept is employed when it comes to container and presentational components.

```
class ProductsContainer extends Component {
  ...
  componentDidMount() {
    fetchProducts()
      .then(products => this.setState({products}));
  }
  render() {
    return <Products products={this.state.products} />;
  }
}
```

Here, products are fetched by an external method inside the container, held within its own store and then passed as props to the presentational component `Products` that displays them.

The container component does not know how to display the information, it only knows how to fetch and adjust it. Likewise, the presentational component does not know where the data came from. The functionality of either component can change without affecting the other.

There may be another section of an application – or a separate application entirely – that can make use of the same presentational component. By having it work solely on props, each part of the application would only need to create its own container around it.

This approach also makes things easier to unit test. The container tests only need to worry about the state being set, while the presentational component can be passed static props to achieve a predictable outcome.

Error boundaries

No matter how well a project is put together, errors will still find a way in. These can happen in very specific circumstances, be hard to diagnose and leave the application in an unstable state – an absolute nightmare for both users and developers.

React v16 was released back in September 2017. As part of that update, any unhandled errors would now unmount the entire application. To counter this, the concept of error

boundaries was introduced. When an error occurs within a component, it will bubble up through its parents until it either hits the root of the application where it will unmount, or finds a component that will handle the error. The idea of the error boundary is a generic component that takes care of the errors for its children.

```
componentDidCatch(error, info) {
  this.setState({ error: error.message });
}

render() {
  return this.state.error ? <ErrorDisplay> : this.props.children;
}
```

By hooking into a new lifecycle method, the error can be stored in state and replace the child contents. This effectively ring-fences this branch of the application off from the rest.

The boundaries work like try/catch blocks. They can be nested inside one another without issue, but any errors that occur within them will be caught by the next boundary up. It's best they are kept as simple as possible.

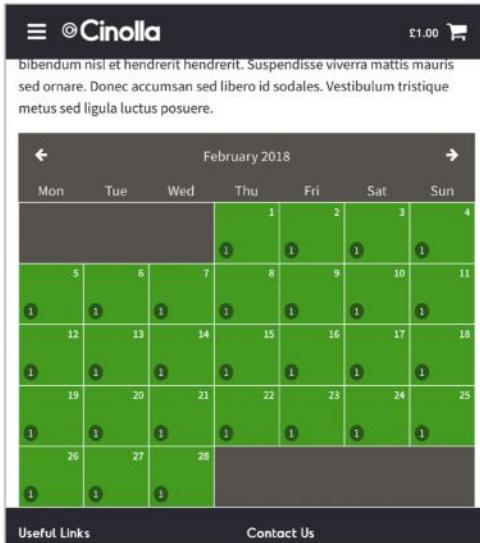
Portals

There are times where a component needs to break out of its parent to be elsewhere in the DOM. Modal windows, for example, belong in the top level of the page in order to avoid issues with z-index and positioning.

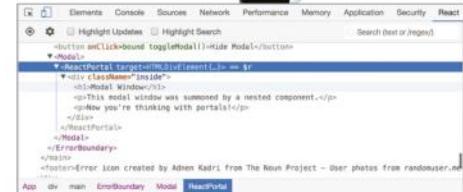
Portals are also part in v16, which enables React to render components into DOM nodes completely separate from the rest of the application. The contents will keep its place in React's structure, but will render elsewhere. This means any event that gets triggered inside the portal will bubble up through the parent in React, rather than into the portal container element itself.

```
ReactDOM.createPortal(
  this.props.children,
  document.getElementById('modal'),
);
```

By creating a dedicated component, the portal can be returned by the `render`



Above For complex UIs such as a calendar, it's acceptable to put a container within a presentational component, so long as their behaviours remain separate



Top The contents of the portal appear inside the original component within React's DevTools. The target element is listed as props

Above By rendering in a sibling of the application root, the modal can take over the screen and easily restrict focus

ANY EVENT THAT GETS TRIGGERED INSIDE THE PORTAL WILL BUBBLE UP THROUGH THE PARENT IN REACT, RATHER THAN INTO THE PORTAL CONTAINER ELEMENT

function. When content needs to be displayed, it can be wrapped in this component and then displayed in the other element.

CSS with styled-components

Styling an application with reusable components can lead to issues with clashing class names. Conventions such as BEM help mitigate the issue, but they aim to treat the symptoms rather than the problem.

It is possible for components to take charge of their own styles. This means they have a way of adjusting visuals on the fly without the need for either inline styles or class toggles. One such solution is `styled-components`, which uses JavaScript to its advantage.

As the name suggests, rather than creating classNames it creates entirely new ready-styled components. The system makes use of ES2015 tagged template literals, which can accept regular CSS and apply that to the

requested element.

```
const Button = styled.button`  
  font-size: 2rem;  
  background: ${props => props.primary ? '#3CB4CB' : 'white'};  
`;
```

By using a placeholder, the style can be altered dynamically. In this example, the button background changes depending if the button is passed a `primary` prop. Any expression can be used here to calculate the style required.

The created component can be used just like any other and any props will be passed through. Custom components can also be styled the same way by using `styled(ComponentName)` instead.

Using React-specific linting

One of the best ways to keep code clean is to use a linter tool. They define a set of rules the code should follow and will highlight anywhere it fails. By ensuring



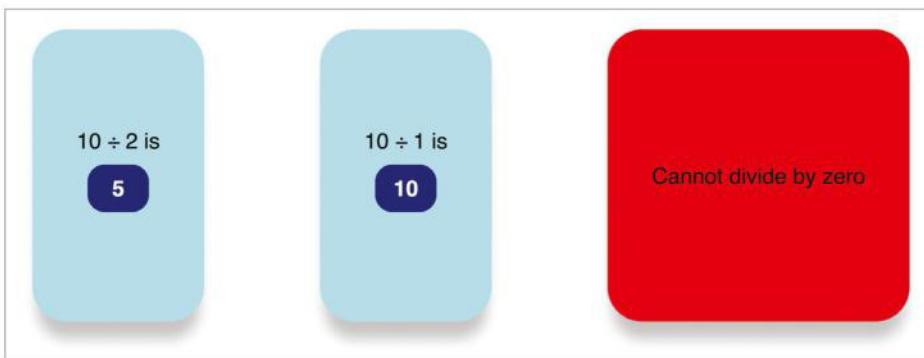
Default

Primary

Elements Console Sources Network Performance React

Props read-only
children: "Primary"
className: "sc-bdVaJa leXYGk"

```
<div className="App">
  <styled.button>...</styled.button>
  <styled.button primary=true>
    <button className="sc-bdVaJa leXYGk">Primary</button>
  </styled.button>
</div>
```



Top Components are given a randomised className to match with the style, which unfortunately can make restyling within DevTools more difficult

Above Each of these cards sit inside its own error boundary, which keeps any error thrown from affecting the rest

all code passes these rules before merging into the codebase, projects stay maintainable and code quality increases.

ESLint is a popular linter for various JavaScript projects. There are plugins available that analyse specific code styles. One of the most common for React is an npm package called `eslint-plugin-react`.

By default, it will check a number of best practices, with rules checking things from keys in iterators to a complete set of prop types. More options can be enabled on a per-project basis by updating the `.eslintrc` config file.

Another popular plugin is `eslint-plugin-jsx-a11y`, which will help fix common issues with accessibility. As JSX offers slightly different syntax to regular HTML, issues with `alt` text and `tabindex`, for example, will not be picked up by regular plugins. It will also pick up React-specific issues, such as assigning `aria` props with different syntax.

Snapshot testing with Jest

Although having full test coverage has obvious benefits, it does come at a cost. When writing lots of small components, the tests can take longer to code than the component itself. Most of the time, it is only actually necessary to check that nothing has changed.

Jest is a testing framework created by Facebook. One of its unique features enables developers to capture the view of a component at one point in time and compare it against any changes in the future. The changes – intentional or not – will be flagged for either acceptance or rejection. Tests become fast, predictable and simple to debug when it is easy to see exactly what changed.

```
test('Button renders', () => {
  const button = renderer
    .create(<Button>Button</Button>)
    .toJSON();
  expect(button).toMatchSnapshot();
```

CINOLLA BOOKING PORTAL

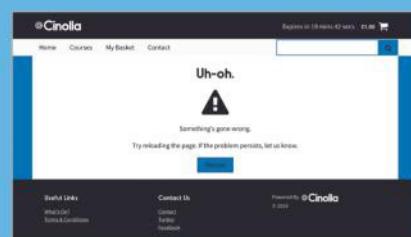
Cinolla enables different activity centres from across the world to take bookings through a customisable online portal. There are plenty of scenarios to watch out for, based on the location and setup of these centres.

Speed and discoverability were two factors high on the list when creating the portal, which made server rendering a necessity. Without it, Facebook's crawler and others like it would not be aware of the dynamic content and centres would not be able to link to courses. This pre-rendering also provided an average of 25% faster first paints to get customers shopping sooner.

Accepted languages are sent as part of the initial request to the server. This meant text could be translated as part of the initial server render to speed up the display and reduce what the end user needs to download at the other end.

Redux powers every aspect of the application, so container components are used extensively to separate state logic from how it is displayed. The checkout timer has a container that supplies the expiry time to a presentational component that manages the countdown. Keeping it generic means it can be used across projects.

Due to the different setups, manual testing would be almost impossible. Each component is paired with a set of unit tests written in Jest to relieve some of the burden. By using snapshotting on simpler components, the time spent developing tests is cut in half.



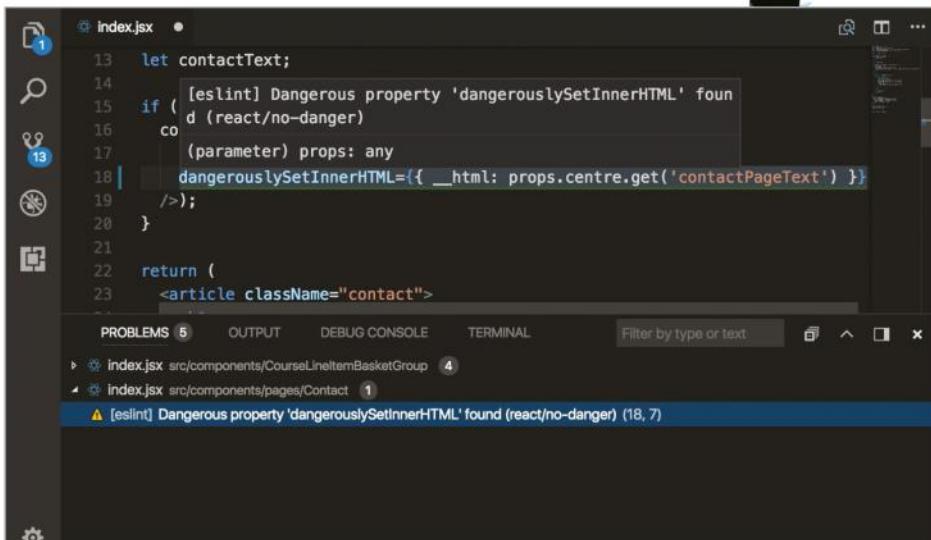
Error boundaries keep issues from unmounting the entire shop. Stack traces are automatically sent to the developers for later inspection

});

When the test first runs, Jest will convert the view to JSON and store that in a special directory that can be committed to source control. When it next runs, it checks the file and will flag up any differences. If that change was a deliberate one, the snapshot is replaced and the test passes. Find out more about Jest and snapshot testing at <https://facebook.github.io/jest>.

Code splitting

As with any single page application, everything gets bundled into one file that can quickly bloat in size if it does not



BY RENDERING THE INITIAL VIEW ON THE SERVER, THE PERCEIVED LOAD TIME CAN BE REDUCED, WHICH ENABLES CRAWLERS TO MORE EASILY PARSE CONTENT

get kept in check. Tools such as Webpack can help split this bundle up into more manageable chunks that can then be requested as needed.

As React encourages creating lots of smaller components, there are plenty of opportunities to break up the bundle. The `react-loadable` package enables a component to define exactly what it needs to render and Webpack can automatically split up its bundle to accommodate this.

```
const LoadableButton = Loadable({
  loader: () => import('./Button'),
  loading: () => <div>Loading...</div>,
});
```

`Loadable` is a HOC that will dynamically import anything the component needs. It takes a few settings, such as what to show while everything loads in, which makes it highly customisable. `LoadableButton` can then be used as a regular component without issue.

For larger applications with routing, it may be more beneficial to split by route instead of component. Common

paths can be pulled in with one request and can help speed things up. It is important to have a balance between the number of bundles and their overall size, which will change depending on the needs of the application.

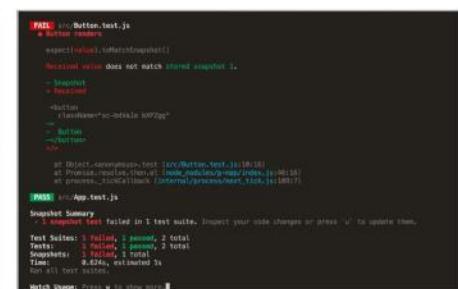
More details about `react-loadable` can be found at <https://github.com/thejameskyle/react-loadable>.

Server rendering

With large applications, users can be looking at a blank screen while the site loads in. Ideally this should be as small as possible. By rendering the initial view on the server, the perceived load time can be reduced, which comes with the added benefit of enabling crawlers to more easily parse content.

React is already equipped to handle rendering on Node servers. A special version of the DOM renderer is available, which follows the same pattern as on the client side.

```
import ReactServer from 'react-dom/server';
import App from './App';
[...]
```



Top Code editors such as Visual Studio Code can integrate with linters and provide users with real-time feedback as components get written

Above Jest will show exactly what has changed between the two snapshots, which can help identify intentional changes from accidental

`ReactServer.renderToString(<App />);`

This method will output the regular HTML as a string, which can then be placed inside a page body as part of the server response. On the client side, React detects the pre-rendered content and seamlessly picks up where it left off.

Server rendering in applications that use code splitting, routing or state containers can get more complicated, but it is still possible. Redux, for example, will build a preloaded state object on the server, which can hydrate the client side when creating the store.

Internationalization

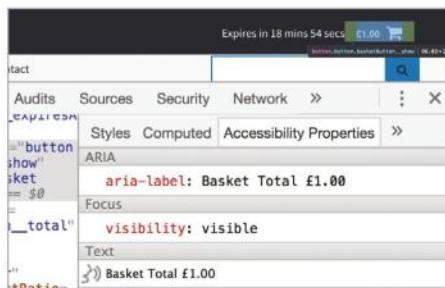
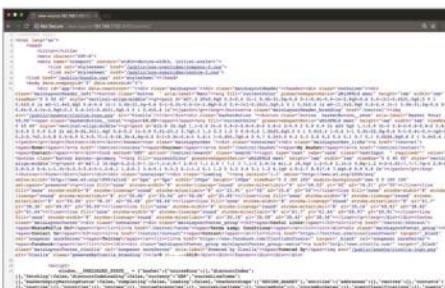
For global websites, internationalization (i18n) is vital to engage local audiences. For client-side libraries like React, the

Unhandled Rejection (Error): Loading chunk 1 failed.

`HTMLScriptElement.onScriptComplete`
`/Users/matt/Sites/misc/10-react/css-in-js/webpack/bootstrap 2b5264db1d42c365a3c8:756`

This screen is visible only in development. It will not appear if the app crashes in production.
 Open your browser's developer console to further inspect this error.

Above Some chunks can at times either be inaccessible or load slowly. Therefore, all requests should have an error state as well as a timeout



only option used to be to serve slow, bulky libraries to handle things like translation and number formatting. More recently, the native Intl API has been made available in browsers to avoid the heavy download cost.

A library by the Yahoo team called React Intl helps bring this new API to React projects. A special set of components automatically translate strings and format numbers, dates and currency. It forms part of its collection of i18n tools called FormatJS.

```
<FormattedMessage
  id='homepage.greeting'
  description='Main greeting for the homepage'
  defaultMessage='Welcome!' />
```

Each component takes props that mirror the settings available to the Intl API. By supplying the required format of the date,

the API can use what it knows about the locale of the browser to compute a string. Any time any of these props change, the string updates automatically.

```
<FormattedMessage
  id='homepage.greeting'
  description='Main greeting for the homepage'
  defaultMessage='Welcome!' />
```

String translations require adding an appropriate translation to the `messages` prop to the provider at the root of the application, but which can be used throughout the application. The library detects the ID and replaces the content as necessary. Details of all the options in this feature can be found at <https://github.com/yahoo/react-intl>.

RESOURCES

Keeping up with the fast-moving world of React can be tricky. As developers push the boundaries of what's possible with the framework, the React team responds with updates to make them easier. Often this means best practices can change and new ways of working can emerge. Here are a couple of resources to keep an eye on.

React Status

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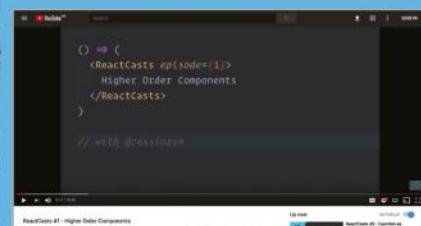
In this final issue of 2017, we're taking a look back at the most popular items of the year. We'll see you back on January 12, 2018 - thanks for your support!

How to Organize a Large React App and Make It Scale — Jack Franklin describes a set of tips and best practices for creating and organizing React applications in a scalable way.

React Status

<https://react.statuscode.com>

As React is the framework of choice for many developers, it has become the subject of countless blog posts and articles detailing the best of what's new. React Status is a weekly round-up of all the best posts from developers at the likes of Airbnb and Discord.



ReactCasts

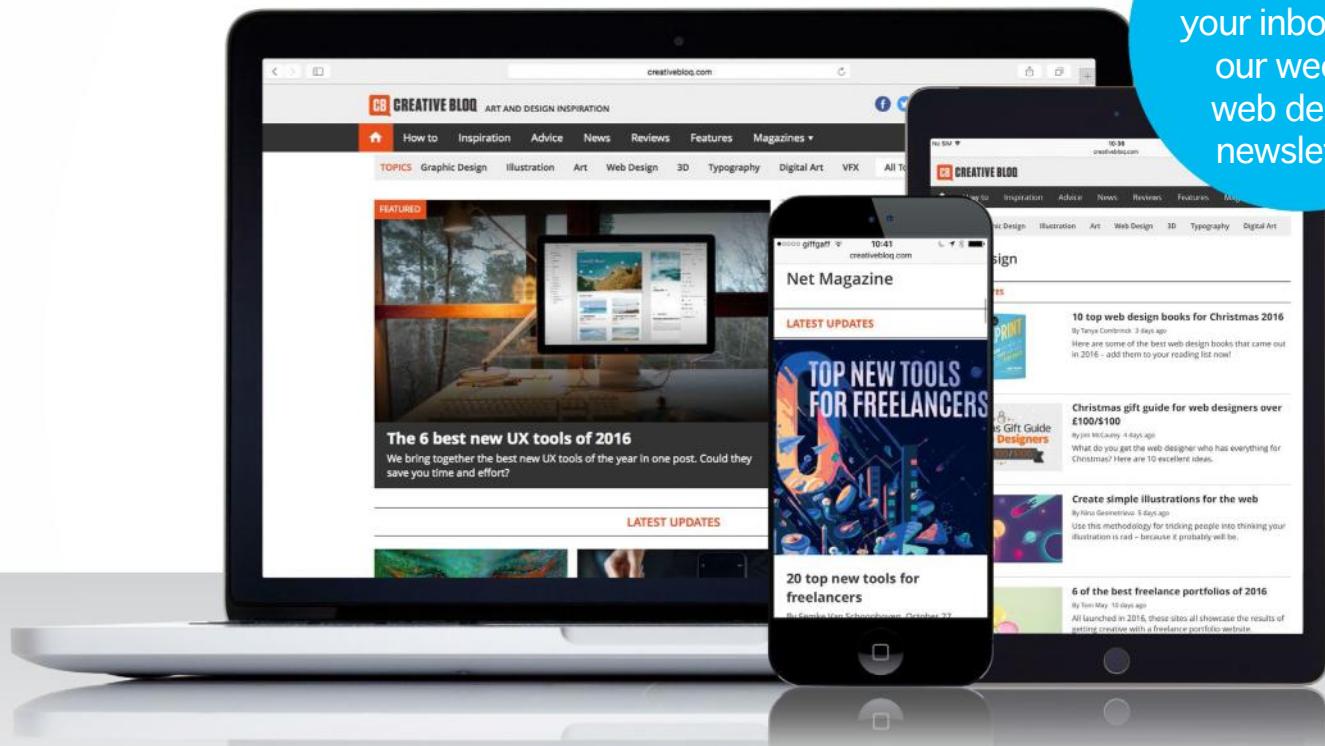
<https://www.youtube.com/ReactCasts>

Created by Cássio Souza, ReactCasts are a set of short instructional videos illustrating the new best practices. Each bitesize video provides tips on how to implement complex techniques, such as server rendering and Redux middleware.



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PROJECTS

Tips, tricks
& techniques

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* PRINCIPLE

USING PRINCIPLE FOR INTERACTION DESIGN

Luke Darbyshire explains how the team at Virgin Holidays uses Principle for Mac to design great interactions

➤ All too often when we design apps and websites, the animations, interactions, touch and scroll behaviour are treated as an afterthought rather than a core part of the experience. Maybe it's natural for designers to feel more comfortable crafting the static designs and hoping to sit down with a developer to work on interactions in-build, but when it comes to crunch time with pressing deadlines, these important details are usually the first to be descoped – consigned to the dusty fate of the mythical 'version 2' release. Designing your interactions in-build can limit creative exploration and if the product that lands in users' hands is simply a clickable version of the static designs, then we miss out on those

opportunities that make digital experiences special. But what if there was a way to experiment with interactions with the same freedom that you have with basic interface design? And what if that could help your team quickly find a shared vision for how your product feels for users? Principle for Mac can help you do just that.

WHAT IS PRINCIPLE FOR MAC?

It's a great tool for turning static designs (Sketch or Photoshop) into animations and interfaces that you can interact with. It isn't the tool to create the original static designs or complex dynamic prototypes, but a useful additional tool.

Like other designers, when I tried Principle soon after its first release, I decided I couldn't achieve some of the finer details of animation that I could with After Effects, so I stuck with my AE workflow for a while. When I joined the app team here at Virgin Holidays, our deadlines didn't really afford the time for much fine tuning in AE. We needed a shortcut and having heard good things, it was time to take another look at Principle. Sure enough, with some time-saving new features, Principle was what our team needed to collaboratively design the finer details of our app's interactions.

PICKING UP PRINCIPLE

If you're used to designing in Sketch, you'll feel right at home in Principle. When you create a new document, the interface is a lot like Sketch with familiar-looking panels for layers, alignment and transformations as well as buttons for key tools along the top bar. The most noticeable difference

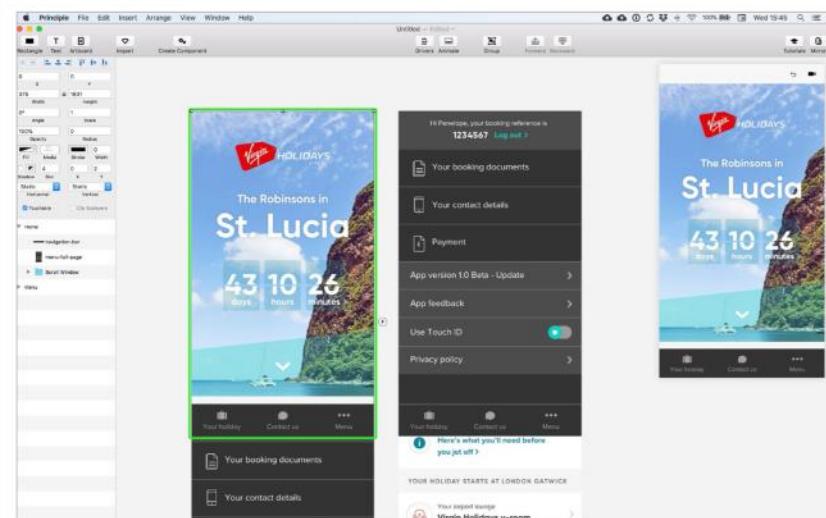
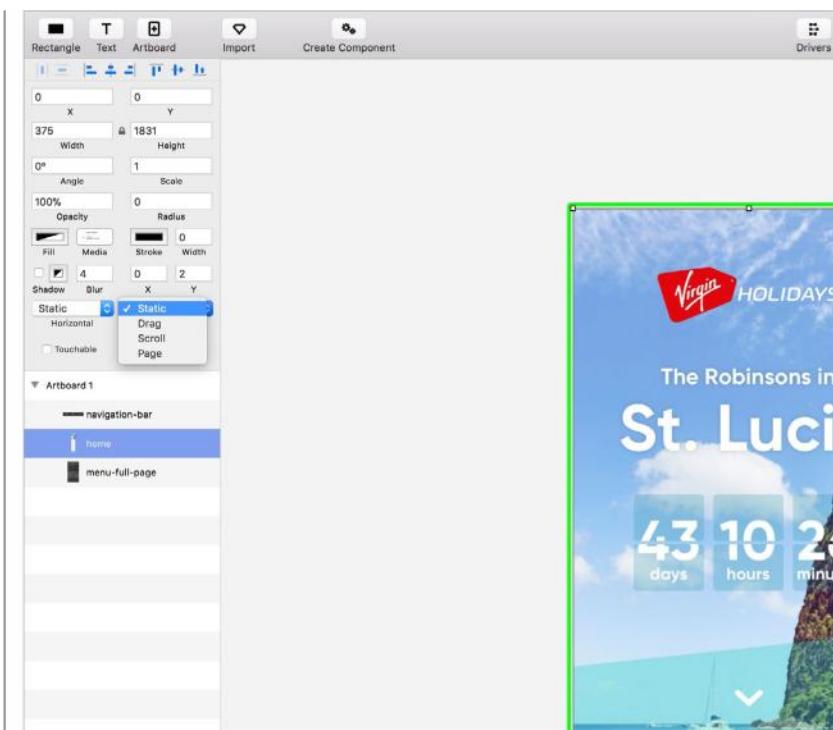
"If you're used to designing in Sketch, you'll feel right at home in Principle"

initially is the Preview Panel floating at the top right of the canvas. Here you can see and interact with your design as it would appear on a device. As you use Principle, you'll also spend a lot of time in the Animate and Drivers panels. More on those later. For now, here's an example to show how easily you can pick up the basics in Principle...

AN EXAMPLE FROM THE WILD

Here at Virgin Holidays, we've been using Principle to bring a little extra craft to interactions. Experimenting with how our app looks and feels when a user scrolls, taps or swipes so the final experience feels intuitive, natural and satisfying. This example is a simplified version of our app's home screen – a timeline of our customer's holiday booking. You can download the assets used in this example here: <http://bit.ly/principle-assets>

Starting with the default empty iPhone size artboard, the first thing we need to do is add some images. In the supplied assets you'll find flattened graphics for three key elements of our app design: the main home page content, the fixed navigation bar and the menu page. They're retina resolution and as they include '@2x' in the file names, Principle



will automatically scale them to the right size when we drag them from Finder onto our Canvas. Reorder your layers so the navigation bar is at the top and the menu is at the bottom. Then let's align the home page to the top of the artboard and the fixed navigation bar to the bottom. Your Principle document will now resemble our Sketch artwork.

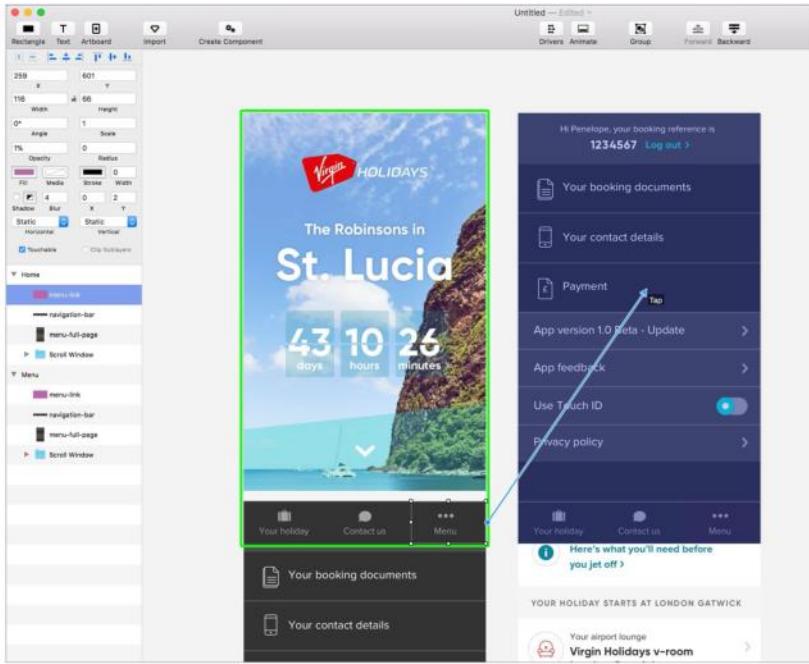
SET UP THE SCROLLING

In the Preview Pane you'll see the images you've just added to the artboard. If you try and interact with it, it's fixed and static so here's how we make our page scrollable. Select the layer with the main

Top It is a straightforward process to set content to scroll using Principle

Above Copying layers between artboards is the quickest way to start animating them

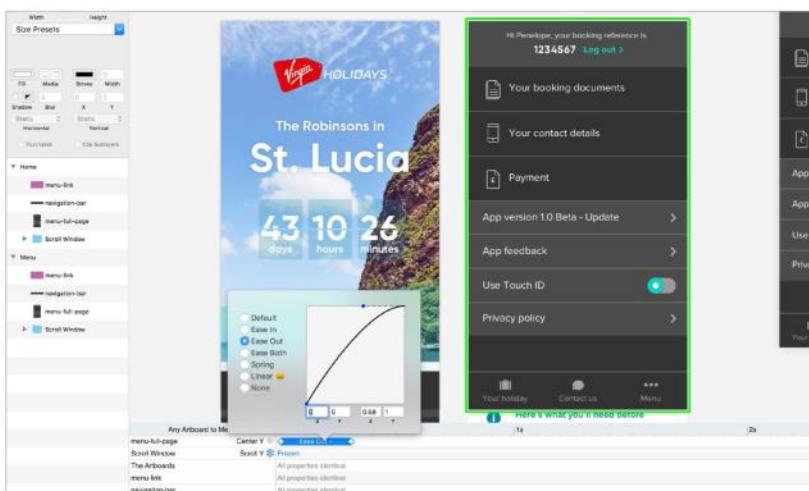




Above Here we are adding a tap event in order to transition between screens

► page content on and you'll notice at the bottom of the Inspector Panel there are two drop-down menus set to Static. This is where we can set our content to scroll horizontally or vertically. Of the three scrolling settings, Drag enables a dragable canvas a bit like navigating a map; Page enables scrolling between fixed-size elements like an image carousel and the one we want; while Scroll enables natural scroll behaviour. While you have the home layer selected, set the Vertical dropdown to Scroll – Principle wraps our layer in a group named Scroll Window. It works just like a normal group and you can rename it to whatever you like but any layers you add within it will now be scrollable. Try it out in the Preview Pane to see how your content scrolls.

Below Use the Animate Panel to refine the timings to what works best for you



Groups in Principle work differently to Sketch or most other design applications. The size and position of your group can be whatever you want it to be, rather than inheriting its size from its contents. Take 30px off the height of your Scroll Window group and you'll see it gives a little more space for the footer content behind the fixed navigation bar.

TRY IT ON A DEVICE

One of Principle's real strengths is the device preview. Just install the Principle Mirror iOS app on your iPhone or iPad and connect your device – your design will show in Principle Mirror and you can interact with it live. To replicate how something feels on a device like this is as close as you can get to the final experience before you release your product. Changes show on the device in real-time so you can rapidly experiment with incremental edits to get the details just right in far less time than it would take you working with a developer in-build. Go ahead and try out your prototype.

CREATE A PAGE TRANSITION

It would be easy to create a basic transition by adding a new artboard with our menu on and adding a link between that and the home page, but we would miss out on some of the Principle features that help make transitions feel more natural. Instead, let's duplicate our first artboard so we have one for Home and one for Menu. Now when we reposition the graphics for the menu page, Principle will automatically animate any element that appears on both artboards, creating a smooth-feeling transition.

Lay out the Menu artboard with the menu page at the top of the viewport. At this point we should also reorder our layers on both artboards so that the scroll window is positioned at the bottom, the menu layer above it and then the fixed navigation bar at the top of the layer order. This enables us to animate the menu page in as if it is sliding up from behind the navigation bar. On the Home artboard, drag the menu image down below the bottom of the artboard until it is hidden behind the navigation bar. Your artboards should now resemble the different home page and menu page.

The next step is to link our two artboards. If we had individual graphics for our links in the navigation bar, we could use those to trigger the transition. As we've used flattened graphics, we can create a hotspot to achieve the same thing. Just tap the Rectangle button in the top toolbar and rename the resulting shape layer to 'menu-link'. Now reposition it so it's above the other layers and resize it to cover the Menu link in the navigation bar. So this doesn't show in our prototype, set the

rectangle's opacity to 0% and click the checkbox to make it 'Touchable'. Now we have our hotspot, copy and paste it into the other artboard – it should automatically be placed in the same position. When you select the hotspot (or any element on the canvas) you will see the small lightning bolt icon appear to the right of the object. This button lets you add any kind of event such as a tap, drag or hover. Let's add a simple tap interaction from the home page to the menu page by clicking the lightning bolt, choosing Tap and dragging the arrow that pops up to the menu artboard. You'll notice each event you add is represented by an arrow on the canvas between the artboards in question. Add the opposite event between the hotspot on the menu and the home page. There we have our page transitions. Test them out in the Preview pane to make sure you can navigate between your pages.

REFINE YOUR TRANSITION

Principle's default animations should have given you a fairly natural transition between the two screens, with the menu sliding in from behind the navigation bar when you tap the Menu button. This is a good

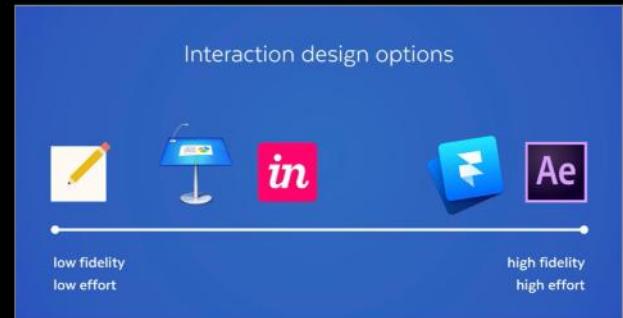
“It’s an easy and intuitive way to control what happens and when within your transition”

example of the time-saving benefits of Principle automatically creating animations between layers of the same name, but with a few small changes, we can certainly do better. You could go some way to refining these animations by experimenting with the position and opacity of the layers in the artboards, but for more control, you want the Animate Panel.

The Animate button in the top bar will show and hide the Animate Panel but it will also appear automatically when you select any of the event arrows shown on the canvas above the artboards. In the Animate Panel you will see all of the animations Principle has created for our click event. This timeline works in the same way as the After Effects timeline. It's an easy and intuitive way to control what happens and when within your transition. For each layer that animates, the blue timeline represents the default 0.3 second duration of the animation. You can delay or make the duration last longer by moving the start and end points of the timeline. If you click on the timeline for any layer, you will see the pacing of the animation. The default ➤

IN-DEPTH

FAST-TRACKING HIGH-FIDELITY PROTOTYPES



Above An illustration to demonstrate effort versus fidelity when it comes to prototyping tools

+ Ranging from good old pen and paper through to full-featured motion graphics software, there's usually a direct relationship between effort and quality in animation design. Principle makes it quick and easy to achieve higher fidelity interactions with some smart automation and a good level of control to fine-tune designs.

Sketch import

Principle's Sketch import can get you off the ground very quickly if your Sketch artwork is relatively simple. Use with care though – nested symbols in your Sketch artwork can lose their appearance and having fewer layers in Principle can make your document easier to work with.

Same layer name animation

This is Principle's biggest time-saver. If you have two artboards containing the same layers (named the same, too), then Principle will automatically animate any differences between the two. Just make sure you don't have different elements using the same layer name – you could be in for some unexpected animations!

Live preview on device

Principle Mirror works a lot like Skala Preview or Sketch Mirror, but enables you to interact with your design live. You only need to install the iOS app on your iPhone or iPad and connect to your Mac. As soon as you have a Principle file open on the desktop, your design will show on Principle Mirror. You even have the option to save several different designs onto the device to take with you when you don't have your Mac.

★ RESOURCES

RESOURCES TO HELP YOU GET STARTED

+ The community for Principle isn't as big or well established as some design tools but you will still find enough support to get off the ground and start using Principle in your day-to-day workflow. Here are some of the best...

Principle

<http://principleformac.com>

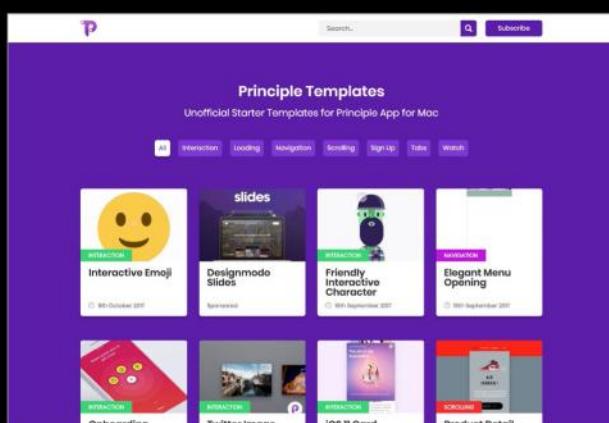
The official site for Principle has a small gallery of downloadable designs, some tutorials for basic functionality, FAQs and a heap more resources.



Principle Templates

<http://principletemplates.com>

Principle Templates has a useful abundance of downloadable starter-designs including user submissions.



Principle Facebook group

<https://www.facebook.com/groups/752853024840625>

There is an active and growing community in this public group, sharing examples and answering questions.

► has a natural feeling of easing-in and easing-out but for our 'menu-full-page' layer, let's change it to the slightly gentler ease-out preset. Do the same for the other event arrow.

Now let's add a nice fade-out on the home page content when the menu slides in. To do this, simply change the opacity of the home layer to 0% on the menu artboard. With the default animations, the home page will now fade to white at the same time the menu slides in. There we have a nice basic transition between the two screens.

SHOW THE NAVIGATION ON SCROLL

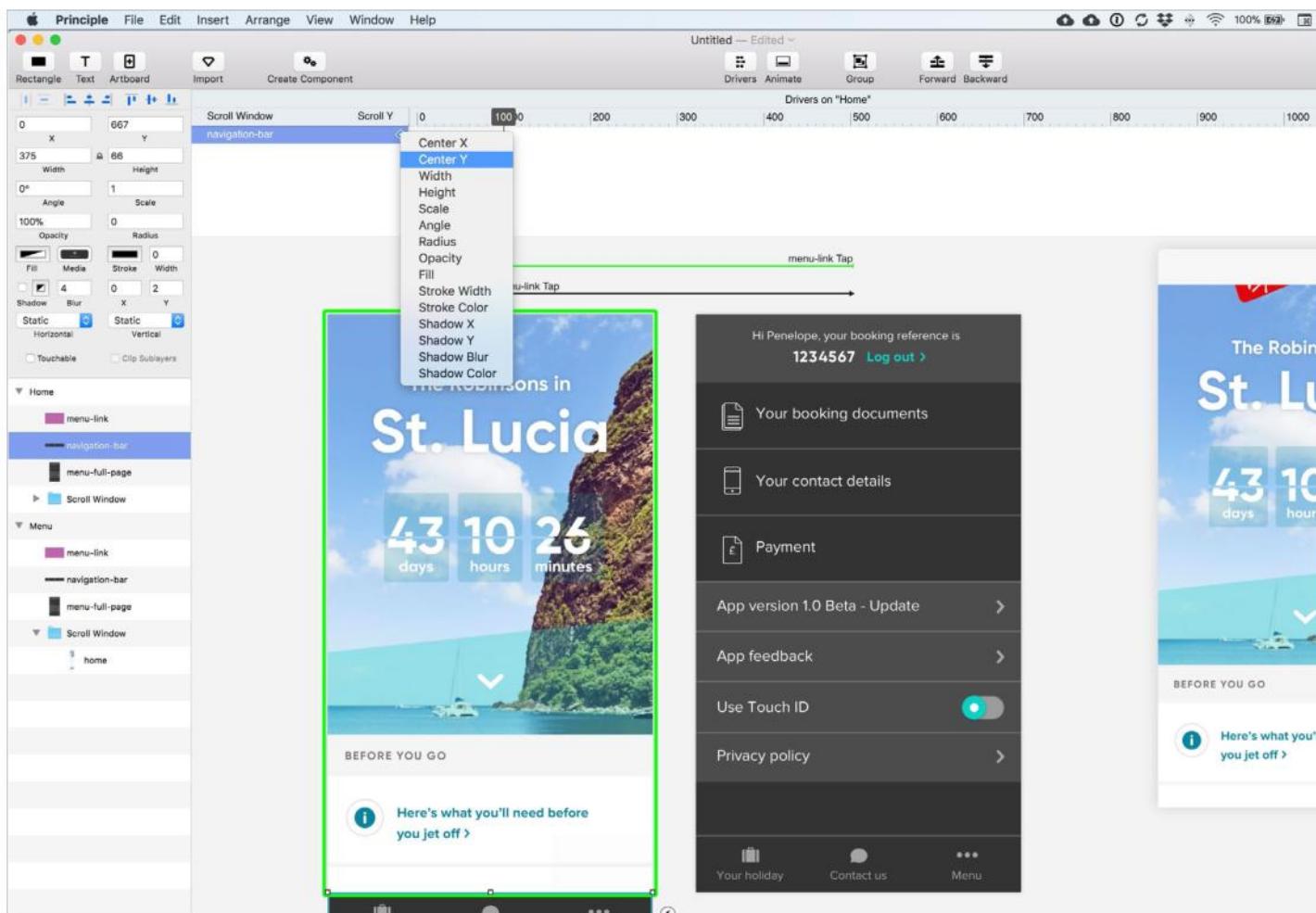
Let's say we wanted to take our interface design a little further and hide the navigation bar until the user scrolls down the page.

To control how something behaves as the users scrolls, we can use the Drivers Panel, accessed via the Drivers button in the top bar. On the left of the Drivers Panel, there is a section for each of the potential drivers in our document. We have a Scroll-Y driver because one of our layers is vertically scrollable. If we had any horizontally scrollable

“Use a multitude of properties for your layer to transform elements as the user scrolls”

layers, we would also have a Scroll-X section within our Drivers Panel. With the navigation-bar layer selected, you will see that the name of the layer appears in the Scroll-Y section of the Drivers Panel. To the right of the layer name is a small blue '+' icon that you can select to add keyframes for this layer based on the Scroll-Y position. You can use a multitude of different properties for your layer – such as position, size, and opacity – to transform elements as the user scrolls.

For our navigation bar, let's simply change the position based on where the user has scrolled. The Drivers Panel works like a timeline where the x-axis in the panel represents scroll distance rather than time. First hide the navigation bar and menu layers from view by moving them down to just below the home page artboard. Next, set the navigation bar to slide in when the user scrolls to the timeline content: slide the grey driver cursor (in the top ruler in the Drivers Panel) from 0 to 100px. You will see the design scrolling to 100px in the Preview Pane. Now we can add a keyframe by clicking on the blue



Above Use the Drivers Panel to make changes to layer properties

‘+’ icon alongside the ‘navigation-bar’ layer name in the Drivers Panel. Choose Centre Y from the list of properties. This will add a keyframe of the navigation-bar’s position on the y-axis.

Add another keyframe by scrolling the driver cursor to 166px and tapping the blue ‘+’ icon again. With this keyframe still selected, we can move the ‘navigation-bar’ layer up so it is aligned to the bottom of the artboard once more. Because it is 66px tall, this means that as a user scrolls, the navigation-bar will slide in at the same pace. Try it out to see if you’re happy with the interaction.

GO FORTH AND ANIMATE

I hope this simple example shows how easily you can start to create prototypes using the Principle app. Have a go at producing whatever animation or interaction you’ve had in mind for your product. The fastest way to learn is often in trying to achieve a tricky real-world example – you’ll soon see how much more you can achieve using Principle. I hope you enjoy exploring what’s possible!

EXTRA TIPS AND POTENTIAL TRAPS

- Artboards in Principle behave more like different states of the same screen than distinct screens. You may end up with several artboards for the same screen. Because of this, Principle tends to be better for a single interface or a ‘scripted’ walkthrough than a fully-interactive prototype.
- In general, having fewer layers will simplify your workflow. Export flattened groups from Sketch for anything that doesn’t need to animate.
- Set your document artboards to normal (@1x) resolution but any images exported via Sketch should be retina resolution (@2x). Name retina images with ‘@2x’ appended to the filename and Principle will automatically scale them correctly.
- Only have the same layer name on different artboards if you want one to animate into the next, otherwise Principle’s automatic animations can cause some unexpected effects.
- ‘Components’ work like Sketch symbols to nest interactions and animations. Perfect for looping animations like a loading spinner. ■



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* CODE EDITORS

THE 5 BEST CODE EDITORS FOR PROGRAMMERS

Jeffrey L Smith walks you through five of the best code editors available. Pick your favourite and supercharge your workflow today

> Whether you are new to the world of programming or an old hand, you need a good editor to perform your magic in. The best editors will make you more efficient at coding and writing, assist you in examining and editing your code, and be customisable to meet your needs. They will also create a more comfortable aesthetic, which should not be underestimated, as you'll be looking at your code editor for potentially hours every day.

There are dozens of text editors, code editors, IDEs, and more out there for you to choose from. So how do you pick? You really only want to have to make the switch to a better editor once in a while. The cost to change tools constantly is often high, in any industry, as you lose some efficiency while you're getting adjusted to the new software. So, read on to discover five of the best code editors for developers

and designers, and find the best in class tool for you to use every day!

SUBLIME TEXT 3

www.sublimetext.com

Cost: Paid (\$80), free indefinite preview

Stability: High

Speed: High

UI/UX: Medium

Customisability: High

Sublime Text is the editor that really changed the way code editors worked. It is lightweight, open and ready to edit your file almost as soon as you have managed to click the button. This responsiveness is something that sets Sublime Text apart from other editors in its class. If you want to open a file and make a quick edit, waiting for a few seconds for

loading may not sound like much, but the delay can grow tedious. Another of Sublime Text's best points is that it is also crazily extensible, with a huge and ever-growing list of plugins available to install. The package manager makes a variety of things available, including themes with which to customise the editor's appearance, code linters (which can assist with more quickly locating any errors in your code), Git plugins, colour pickers, and all kinds of other useful things.

Sublime Text is free to download and use, but will remind you fairly regularly about payment until you do so. If you decide to pay, the same license key can be used by you for any computer that you use, so you can enter the same code on all your machines to make the payment reminder popup go away. The paid license, however, is perhaps Sublime Text's greatest negative feature, with so many competitive products that are available to developers for no cost.

"Sublime Text is free to download and use, but will remind you fairly regularly about payment until you do so"

VISUAL STUDIO CODE

<https://code.visualstudio.com>

Cost: Free

Stability: High

Speed: Medium

UI/UX: High

Customisability: Medium

Visual Studio Code is a code editor developed by Microsoft, and surprisingly, as an open-source software. VS Code is perhaps the closest code editor in this list to being an IDE. It is very robust, and is also one of the slower programs when starting up. However, while using it, VS Code is quick and able to handle quite a few interesting tasks, such as quick Git commits or opening and sorting through multiple folders' worth of content.

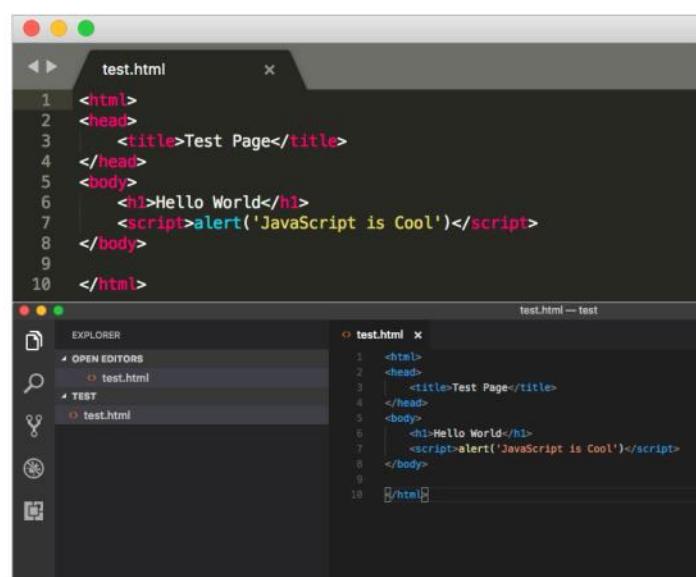
VS Code is perhaps the most meteoric editor, popularity-wise, on this list, as it is continually growing its user base and attracting more developers away from other editors. VS Code has a built-in terminal, as well as built-in Git support, both of which are big winners for fans of this program. It also has a feature that it has dubbed 'IntelliSense', which helps with autocompletion of code as well

KNOWLEDGE

ABOUT CODE EDITORS

+ Code editors are the bread and butter software of many developers, designers, and even writers. Complex integrated development environments (IDEs) are often too bloated and heavy for smaller tasks, such as working on a single project or file. On the other hand, basic text editors such as Notepad on Windows orTextEdit on macOS are underpowered for the tasks of editing code – too many necessary features are missing, making code editing cumbersome. The interim type of software is the code editor, and they shine at just this task, editing single files or single projects, managing a folder's worth of content. Crucially, the slowest of the editors in this list are still much faster and more responsive than dealing with a fully-fledged IDE.

Code editors often used to be very different on each operating system, but the editors in this list are cross-platform and many work to ensure that the experience on different operating systems is very similar. This enables programmers to shift between work and personal computers, or even shared devices, and still get things done without having to adjust to a different environment. In addition, many of the code editors here can have their behaviour modified via configuration option files (things like setting tab lengths, line lengths and wrapping, autocompletion, syntax highlighting, and more). This ability to dictate the program's appearance and behaviour lets the programmer maximise the usefulness of the software, while the defaults enable a casual user to have a pleasant and useful 'out of box' experience.



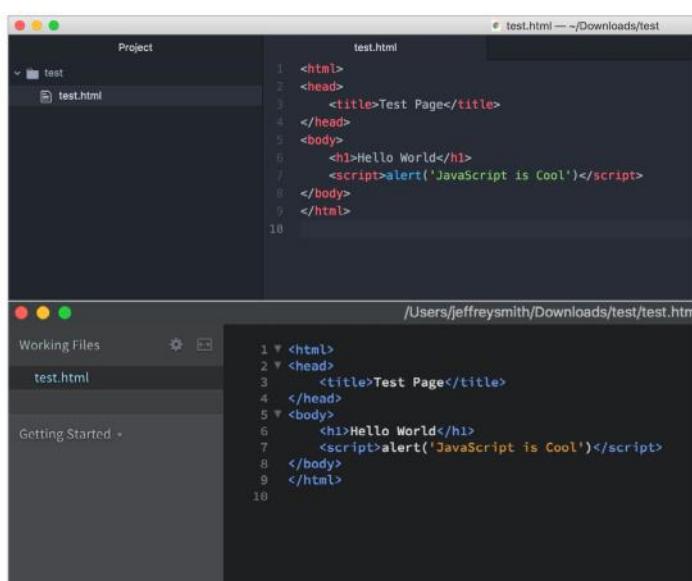
There can be no argument that Sublime Text (top) offers users a wealth of features, but you have to pay for the privilege. Visual Studio Code (below) attracts a growing band of users thanks to its fast performance and comprehensive set of features

★ BUYERS' GUIDE

HOW TO PICK A CODE EDITOR

+ Picking a code editor can be a challenging task. Perhaps the most important thing to remember is that you know what you need. What features are most important to you? Keyboard shortcuts? Appearance? Speed? Stability? Cross-platform experience? Open source? Syntax highlighting options? Consider what you would like your editor to do for you. Do you enjoy autocompletion of function names, or automatic closing brackets or tags? Or do you find those things frustrating? Do you put a lot of stock in the ability to change the colour scheme of your UI often and easily, or are you a big fan of a simple light or dark mode? Do you wish to perform Git operations directly from your editor? The list of potential features is absolutely endless, and only you can say which are the ones that are the most important to you. Which make you more comfortable, efficient, and productive? Decide on your priorities, and then take a look around and find the editor software that ticks off all the boxes.

Another important note about choosing a code editor is to allow time to invest yourself in the software. Take a moment to look through the available settings, plugins, or other extensions. Find out which things you can change or set up to ensure that the experience is the best that it can possibly be for you. Getting your editor customised to your needs and spending some time with it will give you a real taste for whether it is to your liking or not.



Atom (top) has managed to leave behind the stability issues that have plagued it in the past, while Brackets (above) is still relatively new to the scene, but offers some interesting features and is easy to use

- as information on the parameters of functions and known variable names.

ATOM

<https://atom.io>

Cost: Free

Stability: Medium

Speed: Medium

UI/UX: High

Customisability: High

Atom is open source and developed by GitHub.

Its initial development made it apparent that it was heavily influenced by the new style of editor that Sublime Text made prominent, but its key differences are the free, open-source nature of this editor, as well as the easy out-of-the-box integration with Git and GitHub.

Atom has historically had performance and stability problems, but those have diminished significantly as it has become a more mature software. It's true that it still launches slower than some editors, but it's just as reliable and quick to use as any of the rest after that.

BRACKETS

brackets.io

Cost: Free

Stability: Medium

Speed: Medium

UI/UX: High

Customisability: Medium

Brackets is Adobe's open-source editor offering.

To get started, Brackets was faster to start up than Atom, but not as fast as Sublime Text. Brackets was only introduced a few years ago, and is still maturing, but seems to be a very well rounded software. It doesn't come with as many languages natively supported for syntax highlighting as some of the others, but it still has quite a few. Because of its focus on front-end technologies, it also supports CSS preprocessors like LESS and Sass. Brackets doesn't come out the winner on many of the usual speed and reliability metrics, but it does have several unique features worth investigating.

Brackets is easier to use to some degree because it is mostly configurable via its menus, whereas most of the other editors in this list require configuration files to be edited to do much configuration (but you can also edit the configuration file in Brackets if this makes you more comfortable). The program also has a very interesting feature for quick CSS editing. You can use a hotkey to pop out a small section on an HTML page that will let you edit any CSS rules that are currently affecting the element that you have selected, enabling you to quickly locate a styling

problem and then fix it without having to embark on a lot of searching around.

An interesting design decision is that Brackets doesn't use tabs at all for showing open files. Rather, there is an open files menu in the top left, above the file tree. If you're using the split-window view, this open tabs list also splits 'Left' and 'Right' for easier location of the file you're looking for. VS Code uses a similar open files menu, for example, but also uses tabs. In Brackets, this enables maximum screen real estate, but could be a jarring experience if you're used to tab navigation.

VIM

www.vim.org

Cost: Free

Stability: High

Speed: High

UI/UX: Low

Customisability: High

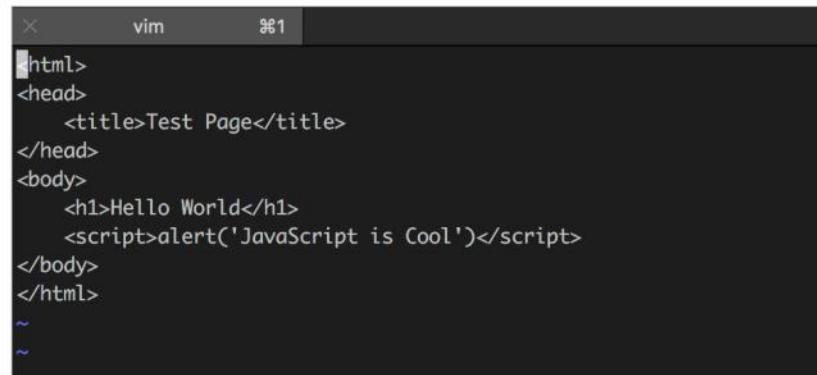
Vim is perhaps the most contentious code editor in this list. Vim is a command line software, included natively with Linux operating systems and macOS, and available for download for Windows. Vim is a favourite option for many old school programmers, and keyboard enthusiasts. The program is navigated entirely with the keyboard, making it much faster and more efficient – but only if sufficient time is spent learning how to operate it. It is also extremely customisable (to the extent that a command line program can be customised).

Vim gives you the ability to use many keyboard shortcuts to speed the editing of your code, and even better, enables you to create customised commands to fit your own editing processes.

Vim earns the award for the steepest learning experience and perhaps one of the worst user experiences overall, due to its utter lack of UI. Learning how to navigate Vim isn't all that challenging, given just a small amount of time, but building the muscle memory of shortcuts and figuring out how best to customise the editor takes a much more substantial amount of time, in order to truly realise the benefits of this powerful program. Vim is incredibly stable, fast, and a real joy to use for veteran command line aficionados and new, interested users alike. If you have the time to learn it, Vim can really increase your coding productivity, and it's a nearly seamless cross-platform experience, with so little UI to consider.

WHICH EDITOR IS BEST?

As is often the case when comparing a subset of programs that all handle the same task, it's difficult to pinpoint a 'best' candidate, especially when there



Above If you spend the time getting to grips with the shortcuts, Vim will serve you well

are so many similarities. However, here are a few takeaway points about each that might be useful in deciding on an editor.

- **Vim** is perhaps the best for keyboarders, efficiency nuts, and macOS/Linux users who enjoy the command line. It's rock-solid and very fast.

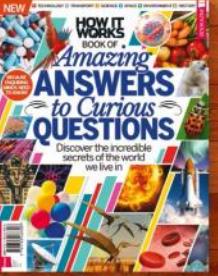
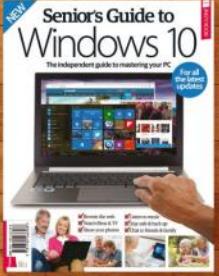
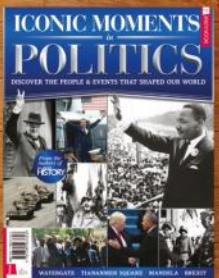
- The most stable and quick of the editors with UIs is probably still **Sublime Text**. The massive counter argument against Sublime Text, however, is the choice of the one-time payment for a software license or the endless nagging of the payment popup.

- **VS Code** is the most fully featured, well rounded editor, for those who want to tackle larger projects with something that both looks nice and handles a variety of languages and requirements.

- **Atom** is, in many people's minds, the more UI friendly (and free) version of Sublime Text. Its appearance is more uniform across platforms, and although it has suffered in terms of performance and stability, over the span of its development this has become less of an issue.

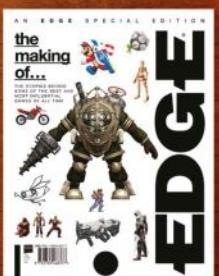
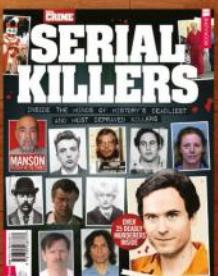
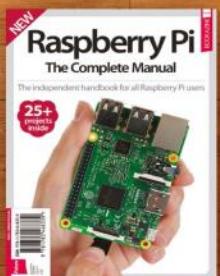
- **Brackets** is the easiest editor for new users, with many of its customisation options all straightforward and in the menus, and has a pleasant to look at UI. It does suffer from similar performance issues to Atom at times, but is still a well rounded good choice, especially for use on macOS.

Regardless of which one you like the best, if you already use one of them, or which one of them you select to try out, always keep in mind that there are dozens of software choices for editing code out there. These are five of the best code editors without wandering off into the realm of full IDEs, and you would be well served by any of them. Good luck with your coding adventures! ■



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* STANDARDS

THE FLEXBOX REVOLUTION

Steve Workman argues there's never been a better time to switch to Flexbox

> There was once a time that the holy grail of web design was a three column layout where the middle column was the first in the HTML. It was a wonderful time of innovation with a technology so new and so few examples of layouts that didn't involve tables. The pioneers of these techniques made great strides to bend floatable blocks into print-style layouts, working out the kinks of Internet Explorer and the web-standards champion, Firefox. Ah, simpler times.

It's been a long time since this was the biggest struggle for a web designer, putting things into grids in the right order has long been consigned to the 'solved problem' category, and it's there because of one dominant project: Bootstrap. There's only a handful of projects that you can truly say have revolutionised web development, and Bootstrap, along with the likes of jQuery, Firebug and Backbone, is one of them.

There's plenty of hard evidence of Bootstrap's dominance of the web – if you query the HTTP Archive

dataset you can see evidence of Bootstrap's CSS in 31% of websites, nearly 120K stars on GitHub, but if you look anywhere on the internet you can see the influence of Bootstrap's CSS. Even my kid's nursery's website uses it, and when it's not obvious, the grid system will be there, included at the start of their CSS.

The difference between Bootstrap and the other revolutionary frameworks I mentioned, is that Bootstrap is still relevant today. There's nothing particularly wrong with the way that float-based grid systems work and they fit the majority of use cases for websites today. It's easy to understand, responsive and comes with all the bells and whistles you need, so many developers will take Bootstrap and go from there. Modern layout systems, CSS Grid and Flexbox, make layout easy, but there's still some complexity in it, and a learning curve. Flexbox in particular has had a troubled history; introduced in 2009, taking seven years to make it to a candidate recommendation. This long development has left a legacy of browser compatibility issues as the spec developed, so that Flexbox's takeup has been very slow.

Well, good news everyone! In early 2018, Bootstrap will usher in the modern era of layout for the masses with Bootstrap 4.0. It contains a fully Flexbox grid, re-written from the ground up for the modern web. Flexbox enables you to have far more control over the order and sizing of your content, letting it flow naturally and allowing you to create content that actually makes sense in the order it is read!

The Bootstrap team have also included a pre-compiled grid-only CSS file, which weighs in at 24KB minified. That sounds like a lot for a grid system, but add gzip, and the repetitive nature of hundreds of vendor prefixes takes it down to 2.8KB. Bootstrap 3 is slightly less than this, but for all the features that Flexbox adds, who cares!

But the best bit, the absolute best bit of the Bootstrap 4.0 news – the grid system will just drop into existing layouts. The old col-size-columns syntax is still there and gives you exactly what you expect. This is a godsend for anyone who wants to make the upgrade but not completely rewrite their site. Which, last time I checked, was everyone.

So, keep an eye out for this, make the switch and get in to Flexbox. There's never been a better time, and Bootstrap has just lowered the bar for everyone.

Please note: The 31% stat comes from number of CSS files with Bootstrap in the name divided by number of URIs in mobile and desktop from the November 2017 BigQuery dataset. ■

PROFILE
Steve is a #webperf geek and has been helping to organise London Web Standards for the last eight years. He is the head of web engineering at Yell and tweets @steveworkman.



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UX, front-end wizardy, product design



* KHROMA

CREATE GREAT COLOUR COMBOS WITH KHROMA

George Hastings reveals how to supercharge your colour workflow by combining your favourite hues with an AI algorithm

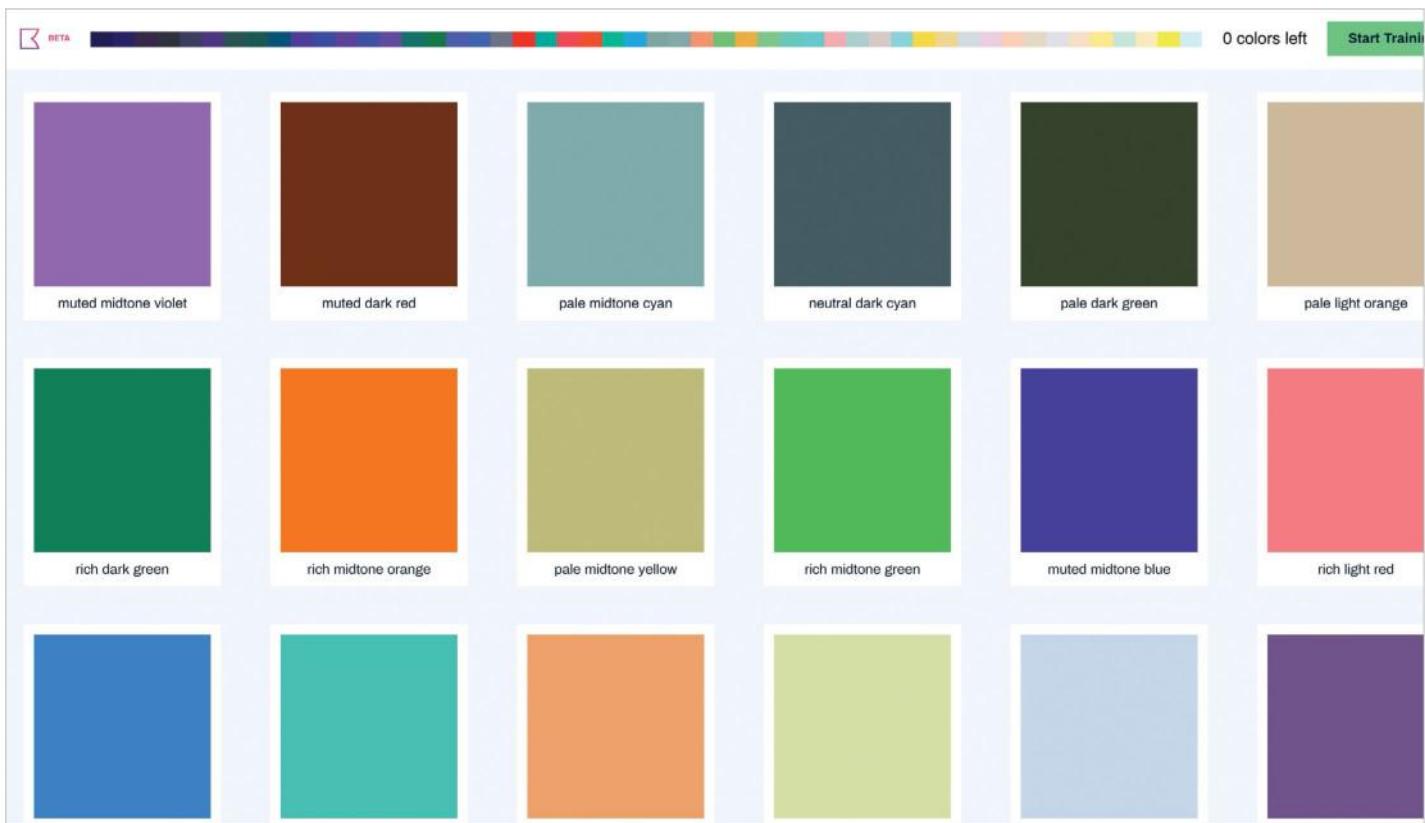
> Excellent use of colour in design is one of those things that separates the great from the average. While subjective and nuanced, colour is a powerful tool that can define the emotion and tone of a digital experience. For something so important, my own workflow around colour was severely lacking. Although there are plenty of great resources already out there, I found there was no way to browse and compare original colour combinations quickly that felt ready to use. That's what I intended to solve by building Khroma (www.khroma.co).

TRAINING

One of the exciting things about Khroma is that you get to train an AI algorithm to act like an extension of your colour designer brain. The challenge is that in order to do that well, you must choose 50 colours

that you like. When building the algorithm, I tried to make it work with less but the results weren't good enough. Fifty ensures that the generator has a decent range to be varied and flexible enough to help with all of your designs. The training process is relatively unstructured and is probably equal parts science and art. A few pro tips from my experience should help you get the most out of it.

It's worth mentioning briefly here how the algorithm works. Your 50 colours will be used to train a neural network that will be able to recognise hundreds of thousands of other similar colours that you'll like (we'll call this your colour affinity). It knows which colours you don't like because it's not in the original 50 you chose. That means if you don't select dark brown, you won't see it. That's fine if you're not a dark brown fan but not if you miss



Above The training screen with the chosen colour bar up top. If there are any particular colours you really want, you should make sure they're there. I really like a good egg yolk yellow and sometimes I have to scroll for a while to find it

something you really like. That's what makes going for variety so important.

To start training your Khroma generator, go to khroma.co and click Personalize. You'll see some instruction and an infinite scrolling wall of colour blocks. A click on one of these blocks will add it to your chosen colours bar and another will remove it. The best way to proceed is to scroll through and choose any colour that jumps out as something you might want to use in a design. This works well for the first 30 colours.

At this point you'll want to look up at the chosen colour bar and see how it's shaping up. If this was your document colours in Sketch, would you have everything you need? The next 20 colours from here should be about refinement. As you proceed a little tooltip will pop out with some suggestions, eg 'picking some more magenta, yellow, and pale colours will improve your results'. I recommend trying to stick to these but don't be afraid to continue picking new colours. From here you should pick 10 more, bringing the total to 40.

Look up at the bar again. Do you see colours that are virtually the same? It's not unusual to pick the same colours more than once since, well, you like them. But that won't be useful to your algorithm. I had a friend try an early prototype and he told me

his results weren't very good. "It's mostly just blue," he said. "Did you pick mostly blue in your training?" I replied. "Yes. I really like blue." The best outcome will come from finding the widest breadth of colour affinity possible. If you mouse over a repeated colour in the top bar, you can click to remove it. This frees that slot for a colour you haven't yet chosen. Do some pruning of any repeats and continue to fill in new colours until you have five picks remaining.

“Scroll through and choose any colour that jumps out as something you might want to use”

I've found it rewarding to throw in some wildcards for my last five picks. These are colours that I don't think I'd ever use on their own. Often I've been pleasantly surprised by what Khroma does with them. When next to other colours, they seem to fit perfectly in a way I wouldn't have imagined.

When you've chosen your wildcards you'll see a Train button pop up in the top right. You can continue to pick colours for as long as you'd like ►

TEST TEMPLATES

+ Choosing colours is always more effective when seen in some applied context. I wanted to make templates that were simple, useful, and universal to all design disciplines.

Type: I love sites that use colour on colour type, so thought this would make a good flagship template.

Poster: I thought it was important to have a standard swatch to display colours equally but the two alone seemed boring. Making them look like a Pantone poster jazzed it up a bit.

Image: A nice duotone effect. You can copy the code to embed the SVG filter in your site.

Gradient: Who doesn't love a gradient? There is an option to turn on chromatic mode, which makes some less muddy in the middle.

Palette: Four colours instead of two. These really show off the power of the AI pairing algorithm.



The five templates of Khroma – you can see the palette adding a couple more colours to the mix

► from this point but if your chosen colours look like a nice dark to light palette with lots of variety, you're probably set to begin training.

Training should take about three minutes. You can expect the accuracy to get up to the high 90s. This essentially represents how well the algorithm can identify your colours. You can actually go back and edit your training colours later on if you want to try out some tweaks.

USAGE

When the training process finishes, you'll be dropped into the generator. You'll be presented with an infinitely scrolling grid of colour combos in the type template. Each combo has an info panel you can open up to see details like the name, hex and RGB values, as well as a WCAG accessibility ratio. With the heart icon on the top right, you can start building a collection of your favourites.

SEARCH

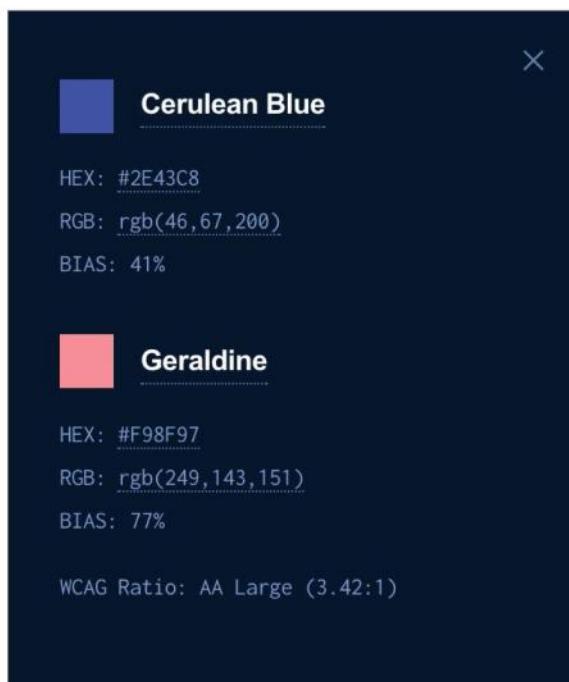
Search is one of the most powerful features of Khroma. Often I'll have a loose idea of what I'm looking for, or I'm already working with a certain colour and want to find complements. Since Khroma gives you access to hundreds of thousands of RGB colours in your affinity range, it seemed important to be able to sift through them.

There are different parameters you can search with: type, hue, name, Hex and RGB. Types include dark, light, pastel, pale, deep, muted, rich, bright and neon. Hues are warm, cool, red, orange, yellow, green, cyan, blue, violet, purple and magenta. There are 1,566 specific colours you can search for with names like 'royal blue' and 'coffee'. Lastly, it accepts Hex and RGB values.

Since Khroma works with two colour combos, save for palettes, there are two slots for search queries. If you enter one term in the search bar and search, you'll get results matching that term for the first colour slot and the second will be random. For example, if you search for 'bright,' you'll get a high-saturation colour and a random pair with it. If you search 'bright and blue,' you'll get those bright colours and a random blue in the second slot. You can also chain type and hue terms together, like 'bright blue' and 'pale yellow,' for example.

One big use cases where search is especially useful is when you have two colours you like and want to find complements to them. You would just enter those exact colours (#8BD2CA and #32514E say) and search under the palette template.

Sometimes you'll search for a colour or term that isn't in your affinity range. That's where the bias controls come into play. You'll see them as two click



Above The details of each pair of colours. Everything can be copied with just a click for quick usage

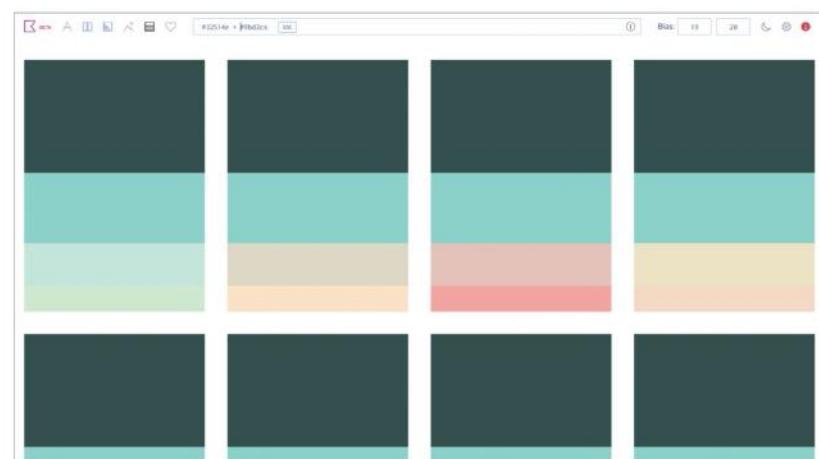
and drag fields in the top right of the toolbar. Bias represents how strict the generator is in matching colours to the 50 you chose. Each colour Khroma generates runs through the algorithm and gets a percentage (how likely it believes you will like the

“Every colour in Khroma defaults to your affinity but is able to adjust, so you’re not limited”

colour) in response. If that percentage is beneath the bias, it will be thrown out and the process repeats. In the case of an out of range search query, the bias is automatically lowered until it can pass the threshold test. If it’s totally out of your range (like our dark brown from earlier), then it will automatically turn it to 0. This way, every colour you get in Khroma defaults to your affinity but is able to adjust so you’re not only limited to those colours.

CUSTOM IMAGES

You can find a few handy options in the top right under the Settings icon. One of them is the ability to upload a custom image to the image template. You don’t need to do anything to the image beforehand; just make sure it’s the right size. While you can go



Above Doing a palette search with #8BD2CA and #32514E. If you’re not seeing anything you like, try rearranging the colours in the search bar. You should get some new, and maybe more interesting results



Left A silly but very valid use of custom images

ahead and use your own headshot (I won’t judge), it’s better to think of it as the ability to make your own template. Take a screenshot of something you’re working on in Sketch or your design tool of choice, upload it, and start browsing limitless combinations!

I hope you give Khroma a try and find it a useful and powerful addition to your design toolkit. ■



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CSS animation

animista

CSS ANIMATIONS ON DEMAND

* ANIMISTA

GET CSS ANIMATIONS ON DEMAND WITH ANIMISTA

Ana Travas explains how to navigate around the Animista web UI and make it part of your workflow



Motion plays a very important role in our lives. Our eyes and our attention automatically shift focus towards moving objects. No static content does that as effectively. Animation on the web can therefore be an incredibly powerful tool when it comes to enhancing the user experience, refining the UI and reducing cognitive load.

There has never been a more exciting time for CSS animation. It has become an invaluable tool for creating beautiful and engaging interfaces. Crafting motion properly is not a small task though, so having some help in that regard can go a long way. This is where Animista (<http://animista.net>) comes in.

Animista is both a collection of pre-made CSS animations and a playground where you can tweak and test them out. This speeds up the process of iterating different animation ideas considerably

and is one of the great things about incorporating Animista into your workflow.

The other is how picky you can be in regard to choosing the right animations. Getting the code only for those you really need is a breeze. No need to bloat your CSS codebase with the entire library! Animista features a responsive UI, enabling you to play with animations and share them on the go as well.

ANIMISTA UI

The Animista playground UI (<http://animista.net/play>) is split in three main sections.

The animations are organised in logical categories, groups and variations, all located at the top of the screen. If, for example, you are looking for suitable animations for a presentation, you will most likely want to browse through the Entrances and



Animista interface: 1 – Top portion contains the menu bar, animation categories, groups and variations, 2 – Options panel, 3 – Main stage

Exits categories. Say you have opted for a Slide-in group within the Entrances category, you will find additional variations like Slide-in-Left, Slide-in-Right and so forth just beneath it.

Clicking on the category, group or the variation will immediately play the animation on the main stage. Each category, group and variation is assigned their own URL, which makes it very easy to bookmark or share them.

The main stage is where all animations take place. There are three buttons in the top-right corner. The first is the Replay Animation button (circular arrow icon), followed by the Add to Favourites (heart icon) and Generate Code (curly braces icon) buttons.

Options panel

The Options panel is where you tweak various aspects of the animation. The first one is a select object drop-down menu that enables you to swap the animated object with another one from a list of predefined objects.

It is followed by a group of options that correspond to standard CSS animation properties. The best way to see how each of them affects the animation is to experiment a bit. Here is a short refresher...

Duration

Represents the `animation-duration` property and is where you change the length of time it takes an animation to complete one cycle. The drop-down menu on its right enables you to change the unit to either seconds or milliseconds.

Timing-function

Represents the `animation-timing-function` property or how the animation progresses over the duration of

The image shows a screenshot of the Animista website. At the top is a header with the title 'ANIMISTA IN REAL LIFE' and a 'USAGE EXAMPLES' section. Below the header is a red banner with the word 'ANIMISTA' in white. The main content area shows a grid of thumbnail images, each representing a different usage example of Animista animations.

+ There are many ways to get creative with Animista. My personal portfolio site that I have created recently (<http://anatravas.me>) is entirely based around Animista animations and contains very little JS.

If you are interested in looking for ideas, here are a few simple examples for CodePen as well.

Card flip

<https://codepen.io/anatravas/full/qqbBeJ>

Creating the animated card flip effect with the help of two basic Animista animations – `flip-2-hor-bottom-fwd` and `flip-2-hor-top-fwd`.

Sprite animation

<https://codepen.io/anatravas/full/rpNjWj>

Analogue clock

<https://codepen.io/anatravas/full/MONwqG>

CSS analogue clock and sprite animation are examples of how to use the `Steps` `animation-timing-function` paired with `rotate-center` and `slide-top` basic Animista animations.

CSS gallery

<https://codepen.io/anatravas/full/YEmoJN>

A simple CSS gallery showing how to use the Animista animations from Entrances, Exits and Text categories.

Triggering Animista animations on scroll

<https://codepen.io/iamlark/full/NwZjbp>

Triggering Animista animations on scroll with the help of ScrollMagic library.



★ RESOURCES

EXTRA READING

+ If you are new to CSS animation, here are a few places that may help you gain better insight and learn basics:

CSS Animation on MDN

https://developer.mozilla.org/en-US/docs/Web/CSS/CSS_Animations/Using_CSS_animations

CSS Animation on W3C

https://www.w3schools.com/css/css3_animations.asp

Web Animation at Work by Rachel Nabors

<https://alistapart.com/article/web-animation-at-work>

The CSS Animations Pocket Guide by Val Head

<http://cssanimationspocketguide.com>

You will most likely want to have more control over how and when animations appear, so here are couple of articles on that subject:

Four Essential JavaScript Functions to Tame CSS3 Transitions and Animations

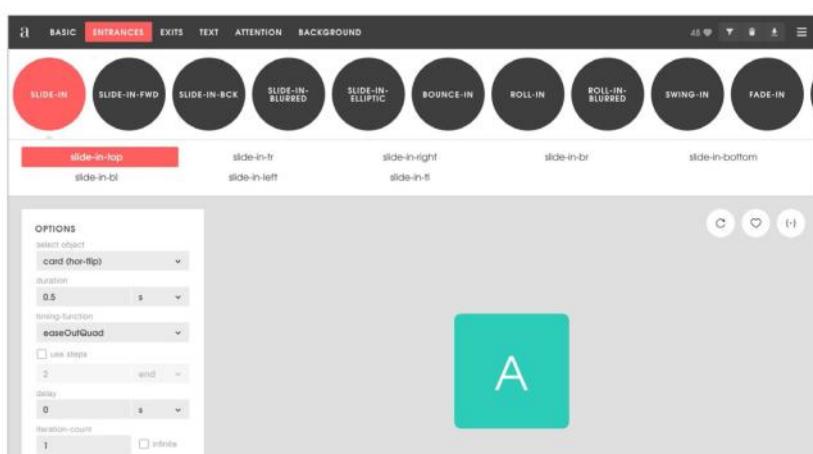
www.javascriptkit.com/javatutors/css-transition-functions.shtml

Using the Intersection Observer API to Trigger Animations and Transitions

<https://alligator.io/js/intersection-observer>

Controlling CSS Animations and Transitions with JavaScript

<https://css-tricks.com/controlling-css-animations-transitions-javascript>



Animista playground You will probably be spending most of your time here

► a cycle. There is a selection of predefined values to pick from. The first five are standard CSS easings, while other values are Robert Penner's easings (<http://robertpenner.com/easing>), translated to the standard cubic-bezier CSS syntax.

● use steps

This is in fact the extension of the `animation-function` property. The first value is a positive integer representing the number of segments we want our animation to break into, rather than having one continuous transition.

The second value can be either `start` or `end` and specifies the point at which the change of values occurs within the interval.

● delay

Represents the `animation-delay` property. By changing its value we tell the animation to start playing after a certain amount of time has passed (defined in seconds or milliseconds).

It can also be set to negative value, which will mean that the animation will start playing partway through the animation cycle.

● iteration-count

Corresponds to the `animation-iteration-count` property. Specifies how many times the animation cycle should run. The value can also be a decimal number. For example, setting it to 0.5 will play the animation only halfway through the cycle and then stop. Ticking the Infinite checkbox will set the animation to play indefinitely.

● direction

Corresponds to the `animation-direction` property. Specifies the direction we want our animation to play. Allowed values are `normal`, `reverse`, `alternate`, and `alternate-reverse`.

● fill-mode

Corresponds to the `animation-fill-mode` property and specifies whether the animation should extend its styles to the target object before starting and after finishing the cycle. You are presented with a choice of none, backwards, forwards and both.

WORKFLOW

Once you get familiar with the UI, you are ready to start integrating it into your workflow. Speaking of workflows, when it comes to Animista you can pick between two; all depending on what your preferences and requirements are.

The common step is having fun on the Animista playground and finding the right animation(s) for

your project. From there on, you can approach things in two ways:

1. Get the code for one animation at a time

2. Keep adding animations you like to the list of favourites and then get the code for the entire selection later on

One at a time

When you see the animation you like, simply click the Generate Code button. You will then be presented with the animation code panel.

At the top of the panel there are two checkboxes. The first one enables you to minify the code, saving some space in the process. The second one will improve compatibility with some older browsers by adding browser vendor prefixes to the code.

Immediately below, you will find the CSS code for the animation helper class named after the currently active animation. It is a one liner containing the animation code with the options from the animation options panel applied. Shorthand syntax is used in order to preserve space. Clicking the Copy Class button will copy the helper class code to your computer clipboard, so you can then simply paste it into your editor.

The last and the most important bit is the animation keyframes code block. It is where the entire sequence of the animation is described and is what you need in order to use the animation in your project. Upon clicking the Copy Keyframes button, the code is ready to be pasted into your CSS.

Batch workflow

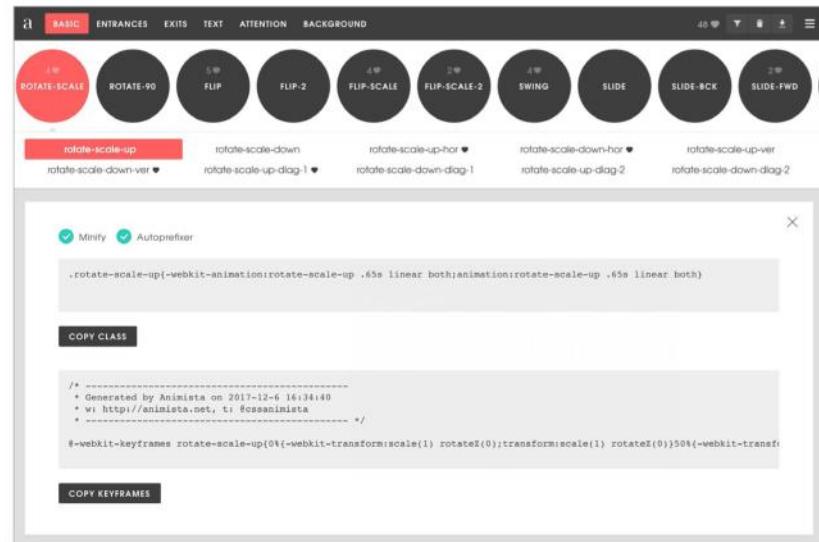
In contrast to the previous approach, when you see the animation you like, instead of immediately generating the code, add it to your favourites by clicking the Add to Favourites button.

The heart icon will appear next to the active animation in the animation variations list, marking it as a favourite. Repeat this as many times as needed until you are happy with your selection.

You can check how many favourites you have collected at any time by glancing at the small pulsating heart icon at the menu bar's right side. Just next to it there is the funnel icon toggle, followed by the garbage can and download buttons.

Clicking the funnel icon will filter out all animations that are not in your favourites list from the UI. To disable the filter mode, simply click it again. Hitting the garbage can button clears the favourites list when you wish to start over.

The download button takes you to the download page, at the top of which you will find a list



View code Animation code panel showing code for the currently active animation

containing all of your favourite animations. Here you will get a chance to review your picks once again. You can also make any last-minute changes by clicking the 'x' button found next to the animation name. Please note that doing this removes the animation from the download queue only, it doesn't remove it from your favourites.

You will find two familiar checkboxes beneath the list – one for code minification and the other for auto-prefixing it.

The last section contains the generated code for your entire selection of animations. In browsers that support HTML5 FileSystem API (at the moment Chrome only), you will see the download button followed by the copy button. Only the copy button will be present in other browsers. The resulting code will be the same in both cases, though.

Upon clicking the Copy Code button, a green notification will inform you that the action was successful and that the code is ready to be pasted into an editor of your choice. In case you are creating a new file, make sure it is saved with the correct extension, in this case .css.

Alternatively, when you click the download button, you will be notified that the animista.css file is waiting for you in your downloads folder. Don't forget to include it in your project as you normally would with any CSS file.

CONCLUSION

There are countless ways to use CSS animations and enrich your web projects. Animista makes the process more fun and a bit easier. New animations will be coming out soon, so be sure to subscribe to Animista newsletter to stay in the loop. In the meanwhile, happy animating! ■

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*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.

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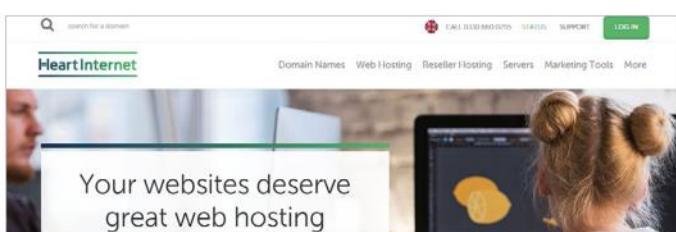


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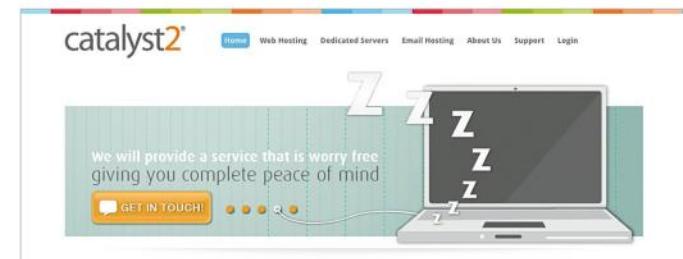


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★ ACCESSIBILITY

“IF IT’S ACCESSIBLE, IT CAN’T BE PRETTY”

Melanie Myers argues that designing with accessibility in mind should be seen as presenting new opportunities, not limiting them

Many digital designers hear about accessibility requirements and automatically think of limits. But what if accessible design could actually be about having the opportunity to create more instead of less? Accessibility doesn't mean you can't have the colour combination you think looks pretty amazing; you just need to add additional tools so that colour blind or visually challenged users can still use the page – such as numbering or underlining. Make the colours and tools work together while still looking great? You'll be even more of a superstar.

Still, because colour contrast is so important, some designers assume they have to sacrifice vibrant colours for dull ones. Not true, says Usability Matters in its blog post about tools and tips for making beautiful and accessible designs. It recommends using the WebAIM Color Contrast Checker.

If we're honest, an accessible website has the same potential to be gorgeous or ugly as any other. If you feel accessibility is limiting you, try re-evaluating your design strategy or purpose. You may be missing opportunities to incorporate design in aspects of the website that do not limit accessibility.

I wonder... what if we started to use this excuse of 'accessibility can't be pretty' in the rest of the world? Would we so easily sacrifice the need for accessibility in the name of good design in other non-web spheres? For example, imagine an interior designer wanting to make a door narrower, a counter higher, or a ceiling lower for purely aesthetic reasons? I can't imagine that would always go over very well. The response would probably be: 'sure it looks nice but it's not functional'.

The comparison extends further when we consider building accessibility regulations. There have been laws and building codes for years defining how a building must be handicap accessible, yet we have seen countless beautiful structures and spaces designed to be used and enjoyed by people of different abilities. The same is possible for websites.

When you design an accessible site, you are approaching design from a new angle, which may lead to even better ideas. You're also exposing your product to a wider user group. So next time you hear 'accessibility' and 'design' in the same sentence, think possibilities, not limits. ■

PROFILE
Melanie is a software developer at Credit Acceptance Corporation in Detroit, Michigan and a passionate web accessibility advocate. Follow her @ThinkPinkCode.

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