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net

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*TUTORIAL



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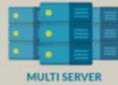
THE NEW RULES OF

A large graphic featuring the letters 'U' and 'X' in a bold, white, sans-serif font. The letters are set against a background of orange and brown geometric shapes. The letter 'U' has a green outline and three colored dots (yellow, orange, blue) on its left vertical stroke. The letter 'X' has a green outline and three colored dots (blue, orange, yellow) on its right vertical stroke.

6 trends changing the face of user experience



Assemble your best tools, run your favorite platforms, and code your own language



 facebook.com/Plesk

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* WELCOME

EDITOR'S NOTE

➤ It's a momentous month for **net**. Having lived out its first 20-plus years in Bath's Georgian splendour, the magazine will be relocating to Bournemouth next issue. And with its new seaside home we also welcome a whole new team – and a new editor. **net** will soon be in the capable hands of Philip Morris. You can follow him on Twitter @philipmorris8 (be kind).

I may have only been editor for a short time, but it has been a real pleasure. And this month's issue is a corker – we've put the spotlight on UX, and asked Kenny Chen to dig into the themes that are shaking up the discipline (page 68), from screenless interfaces to integrated experiences.

We've also addressed one of the discussions gaining traction at the moment: namely, what exactly is the definition of a 'UX designer'? We asked seven web pros for their views on UX job titles, and you can read their thoughts on page 38.

I'm also leaving you with a parting gift, an ebook of Tiffany B. Brown's *CSS Master* (see page 82). In it, you can explore the latest CSS features, dig into advanced effects, and generally learn how to write better, more efficient CSS.

Farewell, and happy reading!

Ruth Hamilton, acting editor
@ruthemhamilton

FEATURED AUTHORS

KENNY CHEN



In this month's cover feature, Kenny, the director of UX design at Bankrate, looks at six themes in UX that will shape the future of design. Head to page 68 for his analysis

w: kennychen.net
t: @kennycheny

CLAUDINA SARAHE



Claudina builds and designs teams, projects and communities. She takes the helm for Gallery this issue – her pick of the tastiest new websites starts on page 44

w: itsmisscs.me
t: @itsmisscs

DAVID STOREY



David is a web development manager at Realise. On page 98, he combines A-Frame and Vue.js to put together a creepy 3D ghost train experience

w: www.realise.com
t: @david_panik

KEZZ BRACEY



Kezz is a coder, designer and game developer. Turn to page 104 for her tutorial on creating exactly the backend you want, using the popular CMS Craft

w: www.kezzbracey.com
t: @kezzbracey



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PRINT AND DIGITAL BUNDLE
Turn to page 22 to find out more about
the savings on offer for subscribers

★ REGULAR

GALLERY 44

> **Claudina Sarahe** runs down her favourite new sites, including Werkstatt's futuristic design for data tech company Collective[i]



FREE
CSS MASTER
EBOOK
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NETWORK

Mail, tweets,
posts and rants

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BEHIND THE COVER

When I looked into the meaning of UX, I realised it's often the simplest ideas that work best. I wanted to show this on the cover with the use of simple geometric shapes that were all somehow connected. Rather than showing a real world of UX in motion, I wanted to suggest the users were immersed within it.

There are steps that represent guiding the user, digital data and connectivity is represented by lines and dots, and there are iconic symbols depicting how and when we need a good user experience (booking restaurants is shown as a knife and fork, Uber cab bookings are shown by the simple cars).

The colour palette was important too. I always aim

to use a complimentary palette and opted for a bright, fun and approachable set of colours. I finished off the design by giving it a bold punchy 3D effect and two choices of fluorescent inks.

Neil Stevens, London, UK



TOOLS FOR THE JOB

I'm co-founder and creative partner at digital agency Station Four. I wanted to bring our latest project to your attention. 100+ Tools to Run your Digital Agency (netm.ag/tools-291) is an extensive, filterable list of software for running an agency that I've reviewed and offered my perspective on.

With 12 categories, it runs the gamut from project

planning to CRM applications and more. It includes screenshots, pricing and demo information for each item, and I think many of your readers would find it an immensely helpful resource. Its print-friendly URL is digitalagency.tools.

Chris Olberding, Florida, US

net: Thanks for bringing this to our attention Chris. Navigating all the different tools out there is a tricky task, and this looks like a great resource to help put people on the right track. Good work!



PREDICTIONS

net: We recently asked Jerry Cao, content strategist



Tool guide Station Four has created this comprehensive tool guide

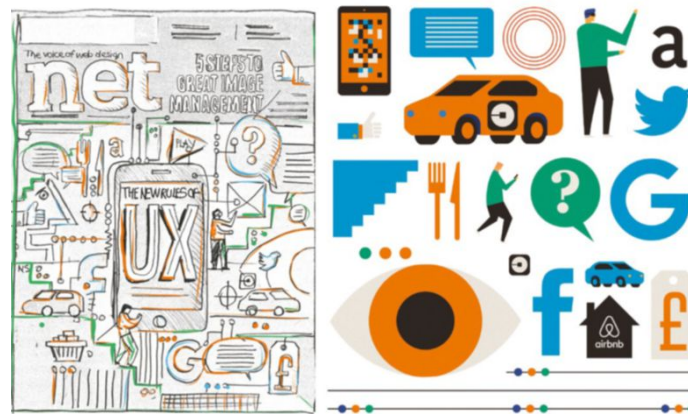
at UXPin, to round up six hot web design trends for the coming year: netm.ag/trends-291. He picked out hidden navigation, inspiration from wearables and Material Design Lite as some of his top picks. Here's what you thought ...

Interesting that, for every two articles saying we should be using hamburger icons, there's one that says we need to move away from them. The debate continues ...

Cozmo1138

I think minimalism will dominate 2017. Simple icons, photos, and videos will replace long copywriting. Other long writing will be condensed into short, easy to understand sentences. Designers will try to decrease the clicks/presses needed for each task by merging a few similar functions into one.

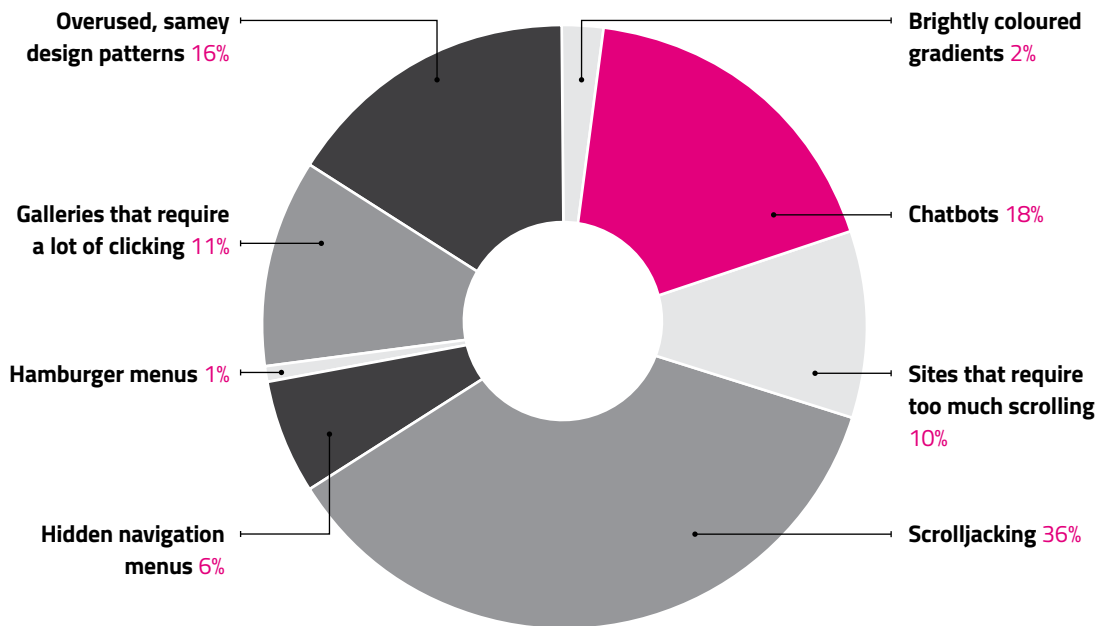
Jim Carol



Work in progress UK-based illustrator Neil Stevens created this issue's cover. Here's a sneak peek of his early sketches and ideas

*THE POLL

WHAT'S THE MOST ANNOYING WEB DESIGN TREND?



From our timeline

Which web design book has had the most lasting impact on you?



Just Enough Research by @mulegirl – it's a must-read for UX designers.

@_tashhockey



Design is a Job! I started reading again as soon as I'd finished.

@KatherineCory



The Zen of CSS Design by Dave Shea and Molly Holzschlag. Everything was different after reading it.

@doug_hanke



Lea Verou's *CSS Secrets* and Ethan Marcotte's *Responsive Web Design*.

@komiska



Steve Krug's *Don't Make Me Think*. Great on usability.

@ninahaghighi



Jeffrey Zeldman's *Designing with Web Standards* – a convincing argument for a simpler approach.

@jrlarsen



A Web for Everyone by Sarah Horton and Whitney Quesenbery.

Every web designer should get familiar with its personas.

@RealAlanDalton



The Art and Science of Web Design by Jeffrey Veen – my first web

book and the foundation of my career.

@adamliptrot



Lean UX by Jeff Gothelf and *Discussing Design* by Adam Connor and

Aaron Irizarry. Both opened my eyes to better ways of collaboration.

@amymarquez

COOL STUFF WE LEARNED THIS MONTH

THE CURRENT STATE OF ADAPTIVE DESIGN



2016 was a great year for adaptive design. In this article Charlie Deets, a WhatsApp and Facebook product designer, looks at some brilliant new features that appeared in some of our favourite tools and make adaptive design easier. netm.ag/adaptive-291

GET STARTED WITH NPM



We've all heard of npm, but not everyone has incorporated it into their workflow. Maybe you don't understand why you would want to – and you're not alone! This fantastic, comprehensive article explains what npm can do for you and how to take advantage of its power. netm.ag/beginnpm-291

ONE CSS PROPERTY CAN BREAK YOUR SITE



"This site is so poorly written it spins up the fans of my gaming laptop." That was the comment the author of the article below received with regard to their hand-coded site that contained no JavaScript, no WebGL, no canvas, nothing that could explain its extreme jankiness. The trouble was caused by just five lines of code: background-blend-mode CSS properties. netm.ag/ruin-291

EXCHANGE

Send your questions to netmag@futurenet.com

Practical
advice from
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THIS MONTH FEATURING...

SIMON FOSTER



Simon is an award-winning freelance frontend web designer based in London
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t: @simonstretch

CHRIS HOW

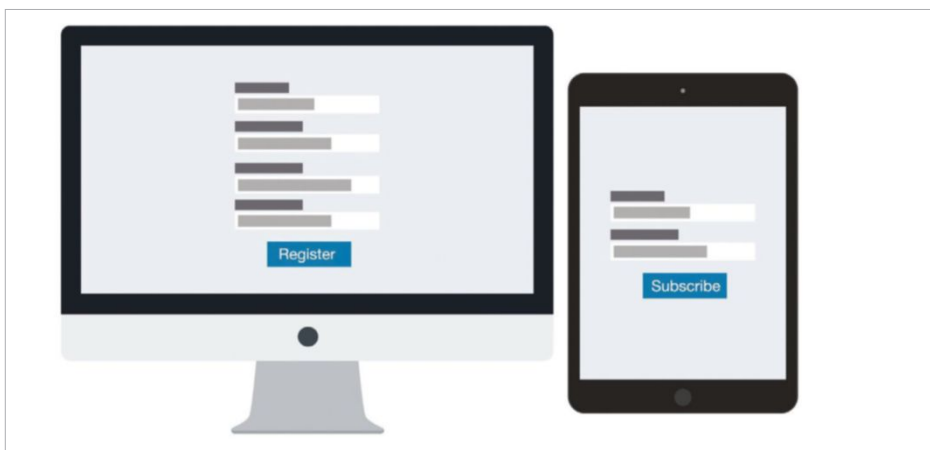


Chris is an experience lead at Webcredible, a UX agency in London
w: chrishow.co.uk
t: @chrishow

*QUESTION OF THE MONTH

What tools or frameworks would you recommend for building web forms?

Andrea Parker, Madrid, ES



Good form For more advice on forms, take a look at Nick Babich's guidelines: netm.ag/forms-291

SF: Personally I hand-write all my HTML, which of course includes forms. Over time I've written so many that I have HTML code saved for forms that I reuse whenever necessary – I just take the bits I need, depending on how complex the form is. If you're using a framework like Bootstrap or similar you can of course use the functionality built into them for your forms. However, I'm not really a fan of them – I prefer to keep everything as bespoke as possible.

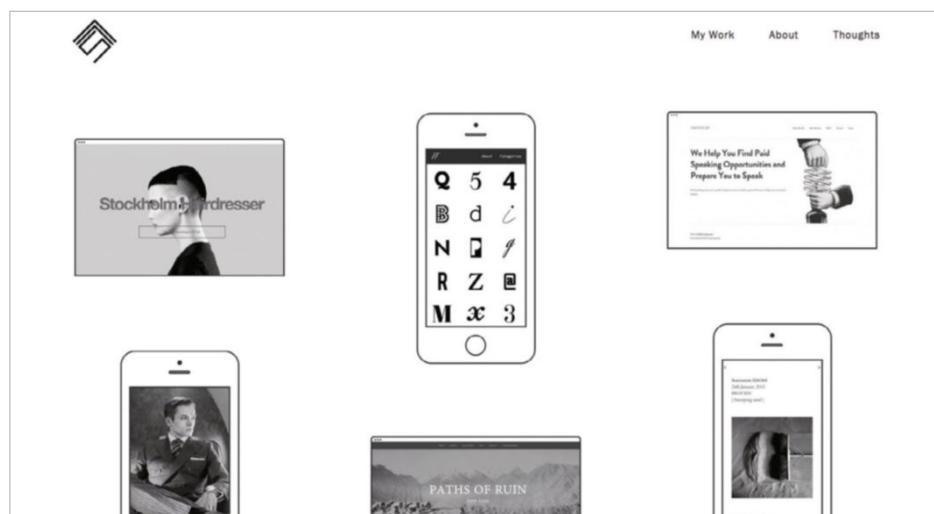
WEB DESIGN REDESIGN

How many times have you redesigned your portfolio?

Shane Prendergast, Manchester, UK

SF: Good question! A lot of times. Although my website serves as my portfolio, it is also a bit of a sandpit for experimenting with different ideas. I don't really see it as 'redesigning' whenever I change it, it feels more like a natural progression or evolution.

When I first started out I used my site as a sketchbook and played around with the then-emerging advances in CSS3 and HTML5, which was a lot of fun. Nowadays I guess my site is more of an orthodox portfolio, but I still try and experiment with different ways of publishing content on it. I like it when portfolios reflect a person's personality. Too many are very slick and professional, and adhere to all the latest trends, but have no soul and bore me.



Shake it up Simon Foster argues that it's vital your online portfolio shows off your personality

UX

SURVEY PITFALLS

What are the biggest UX pitfalls when putting together an online survey?

Jeremy Kane, Wisconsin, US

CH: You are fighting for participants' time and attention, so keep surveys short and relevant to the audience. Check for any unintended bias you may introduce in the questions you ask. Write questions the audience can understand and answer. Include options for 'Other' and 'Not applicable' in set responses so you avoid collecting dirty data. Collect data that allows for behavioural segmentation. To avoid any unforeseen pitfalls, test-run your survey with a small number of participants, then iterate before a wider launch.

WEB DESIGN

PRINT STYLE

How can we best give a print-like experience on the web in terms of the design and UX?

Alex M, London, UK

SE: It's important to remember that the web and print are two very different mediums. The modern web is an infinite canvas that can be consumed on any number of devices, resolutions and browsers, and should be treated as such. Print has a fixed canvas and is a physical object that is used very differently. The early web took a lot from the print world because we had no other real frame of reference, but over

time the web has developed a design and UX language built upon its own unique set of requirements and uses.

There are still similarities of course – you can read a web article on your mobile device or tablet 'on the go', in the same way you can read an article from a magazine. But the magazine article is a static object, whereas the web article is a living, moving and often interactive piece of information. We can visit other web pages from it via contextual links, we can copy and paste text from it, we can download images, and even share it via social media. So the experience is very different. Giving a print-like experience on the web would mean taking a lot of these capabilities away, surely?

UX

TEST IT OUT

What methods of testing your sites do you use most often?

Charlotte Myhill, Birmingham, UK

CH: It depends. The methods fall out of what I'm trying to find out, the stage I am in the project, the type of stimulus material I have, and the length of time and budget available.

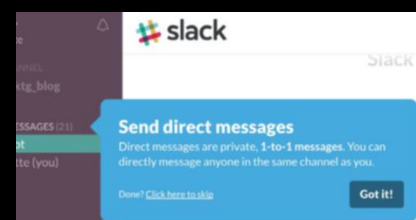
Ideally, use at least two methods: something qualitative for rich insights and something quantitative for more inputs. To build a broad research toolkit, look for opportunities to include a testing method new to you, or one you haven't used for a while. **M**

3 SIMPLE STEPS

What's the best way to onboard users?

Brad Mills, MA, US

CH: Firstly, if I find I'm designing ways to onboard users I stop for a cup of tea. Then I follow these three steps ...



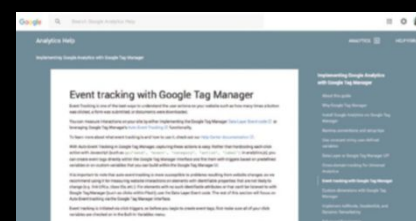
SIMPLIFY

+ I return to my design to see how I can simplify the UI to make the use and discoverability of features more self-evident.



DELIGHT

+ A user will only 'return and learn' if their initial experience empowers and delights them. To help them get more from repeated use, consider a combination of methods: set challenges to complete tasks; provide contextual tips based on the user's behaviour; or suggest things to try – the 'Alexa weekly email' is a great example of this.



PERSONALISE

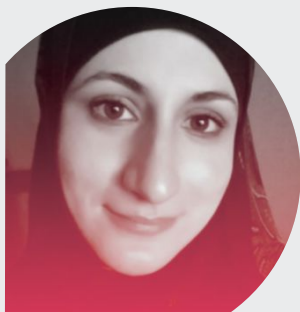
+ Review usage data to identify which features are being used. This will give some clues on the ones to promote.

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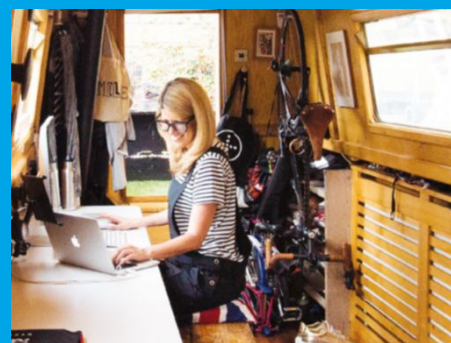
SIDE PROJECT OF THE MONTH 14

Felix Neumann's animation project brings his favourite album covers to life



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A print designer's clients develop an unhealthy fixation on a cashless society



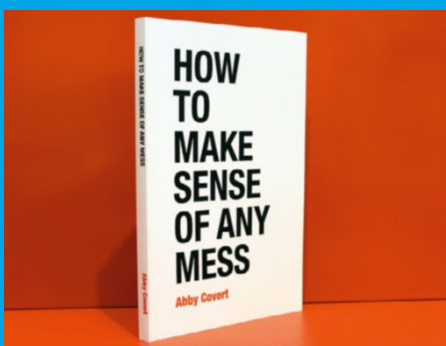
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Pip Jamieson introduces us to the boat she runs her networking business from



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The stuff we want this month, from the newest books to a handy GIF-creator



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Shaun Dickie soaks up the atmosphere at the first London Awwwards Conference



Original artwork by Paul Insect

12 INCH MOTION

Felix Neumann's latest side project sees him bringing his favourite album covers to life

★ SIDE PROJECT OF THE MONTH



INFO

job: 2D motion designer

w: www.vonliska.com

t: @FelixvonLiska

> net: What gave you the idea for the 12 Inch Motion project (12inchmotion.tumblr.com)?

FN: I've always been a big music fan, and over the years my tastes have varied quite a bit, so my iTunes library kept on growing. I always made sure all the tracks and albums were named properly, and most importantly had the album cover added to them. I really hate the default iTunes 'musical notes' avatar. I feel like many people don't really care about the artwork any more – they just download some MP3s and start listening. But to me, there are so many great records out there with amazing artwork that completes the whole experience of that record. I wanted to do something to make the album covers gain back some attention – that's when I started animating some of the ones I like.

net: What do you do in your day job?

FN: I freelance as a 2D motion designer in Berlin. I animate things for all kinds of clients – I make GIFs for social media, create music videos and also do print jobs sometimes. But I always make sure I take time in between to work on my side projects. Since I started uploading the animated covers from this project to Instagram, my range has increased – people have contacted me on Instagram about collaborating on jobs.

net: What techniques do your animations use?

FN: I usually look at a cover I like and try to imagine the most fitting or interesting movements in it. Then I break the original artwork apart into all its elements. Sometimes I also have to recreate parts of it by hand. Everything I want to animate, I need to have in separate layers. And then I use whatever tool or technique works best for that job – it's mostly digital cutout animation and classic motion graphics. I have learned a lot – pretty much every animation is a way for me to try a different technique or approach.

net: What's the biggest challenge you've faced, and how did you overcome it?

FN: With this project, I can face technical issues during the animation process, but nothing so far that I've felt like I had to 'overcome'. I guess that's because I'm not really letting it happen; I don't want to taint my passion project with needless frustrations.

net: Which is your favourite design, and why?

FN: That's a tough one. I think one would be *The Mountain Will Fall* by DJ Shadow [above]. It's a great record with an intense opening track, and the design nicely juxtaposes the heavy, aggressive motif of that falling mountain with a strange feeling of lightness and weightlessness. That's what the music embodies as well. This is one of those albums where the music and artwork just fit together perfectly.

But my favourite album cover to animate was *Floa* by Mammal Hands (netm.ag/floa-291). London-based designer Daniel Halsall, who created the original artwork, made these 12 individual sort of glyphs that I turned into little moving characters. There was a lot to play with! **n**



THE CASHLESS SOCIETY

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

* CLIENTS FROM HELL

> I used to freelance design for a family-owned print magazine, run by a husband and wife who did most of the writing, running profiles of local artists. I was the only designer doing layouts and, considering the amount of work that went into every issue, was giving them a good deal.

I worked closely with them for two years and was a huge part of the development of the magazine. Sometimes they were a little late with payments, but as long as I was paid in full by the time we started the next issue, I remained flexible.

For the last issue I designed, it took them five months to even consider discussing my invoice. Lots of dodged emails, vague responses, and changing the subject during phone conversations. Finally, they approached me about the next one.

Client: We would like to get started on the next issue so we can have it printed for the holidays.

Me: OK, but I need paying for the last issue first.

Client: I'm not sure that will be possible. We simply didn't make enough profit from the last issue. So, when can you start?

Me: I still did over 40 hours of work and need to be paid, regardless of profit. I'd like to start too, but I'm sorry, I just can't until we're square.

Client: Any way you could compromise on that? I promised my wife I wouldn't dip into our savings to pay you.

Me: So, you have the money, but you just don't want to give it to me?

Client: Well, yes. We decided we won't pay for anything related to the magazine that isn't paid for by the magazine. Also, I wrote you a reference letter last year. You owe me this.

Me: ...

Client: Listen, if you aren't passionate about this project I don't want you working on it any more. It's clear to me that all you think about is money and you don't believe in the magazine and what we're doing. You need to lighten up and live life, my friend.

I severed ties shortly after this conversation.

CLIENTS FROM HELL
clientsfromhell.net



* HOW TO

MANAGE YOUR TIME AND WORKLOAD

Home and work life can blend into one when you go freelance. Getting your workload right is also tricky, so you don't have too much or too little on your plate. We asked the @netmag followers how they manage freelance life.

ALLOCATE AND PRIORITISE

@JoannaKosinska points out that you have three types of work: looking for work, the work itself, and admin. "I plan as much as I can, set priorities and mark them in my diary." She also notes that while you may be able to estimate how long work will take, some of it will always depend on the client so you need to allow for that.

USE HELPFUL TOOLS

@blueocto recommends Streak, a customer relationship management (CRM) tool that integrates with Gmail, a paper planner, and also a whiteboard. @attck suggests a time tracking system such as @harvest and a smart email management system that allows you to organise with labels and filters.

BEAT PROCRASTINATION

@KrishnaSDesigns advises thinking about the repercussions, when the time-wasting bug bites.

She also suggests you avoid working in your pyjamas, and leave your desk to eat. "Prioritise and execute!" says @mds. "When that fails, either recommit, revise, or remove item from list."



WATER WORLD

Pip Jamieson introduces us to Horace, the houseboat from which she runs her networking business

* WORKSPACE

➤ When I returned to the UK after nine years in Sydney, I couldn't face not living on or near the water. So my husband Howard suggested we buy a houseboat.

It's a magical experience living on Horace. It's a bit like living in the country, but with the advantages being in the inner city. We keep a supply of duck feed on board, and every morning I wake and feed the ducks. It's a wonderful way to start the day.

I started creative networking platform The Dots from Horace, and I love the bespoke desk [1] we fitted, crafted by Unto This Last. It looks directly over the canal, which never ceases to inspire me. While my team is now too big for the boat, I am constantly entertaining clients here, and

we have a big booze cabinet that comes in very handy for that. When I first moved back to London I was finding it really hard to lock in meetings with potential partners and clients, until I started inviting people for drinks on Horace. I knew people were fascinated by houseboats (you can tell by the constant stream of passers-by that peer into the windows) but I had no idea quite how much. Suddenly my diary was full!

My favourite thing is our beautiful antique rowing boat, Little Horace [2]. Whenever I have a hard day at work, I just head home and go for a row. It's amazing how an insurmountable problem can suddenly feel manageable again.

I'm a big reader, so our massive leather arm chair [3] is my

favourite spot to devour niche mags and books.

My gold disco shoes by Alexander McQueen [4] always make me smile. I don't usually splash out on designer gear, so they're definitely my most decadent item of clothing. They only come out on special occasions, like when I'm doing a talk – the moment I slip them on, I feel like I'm ready to take on anything.

Mounted above my laptop is my most treasured possession, a picture of my mother [5], who passed away last year. I was really dyslexic as a kid and struggled at school in the early years; my teachers just assumed I wasn't that bright. My incredible Mum wasn't having any of it, and worked tirelessly to make sure I got the support I needed. I look at her picture to remind myself to make her proud and never give up. **■**

* PROFILE

Pip (@Pip_Jamieson) is the founder of The Dots, a platform designed to connect creatives with collaborators, companies and commercial opportunities

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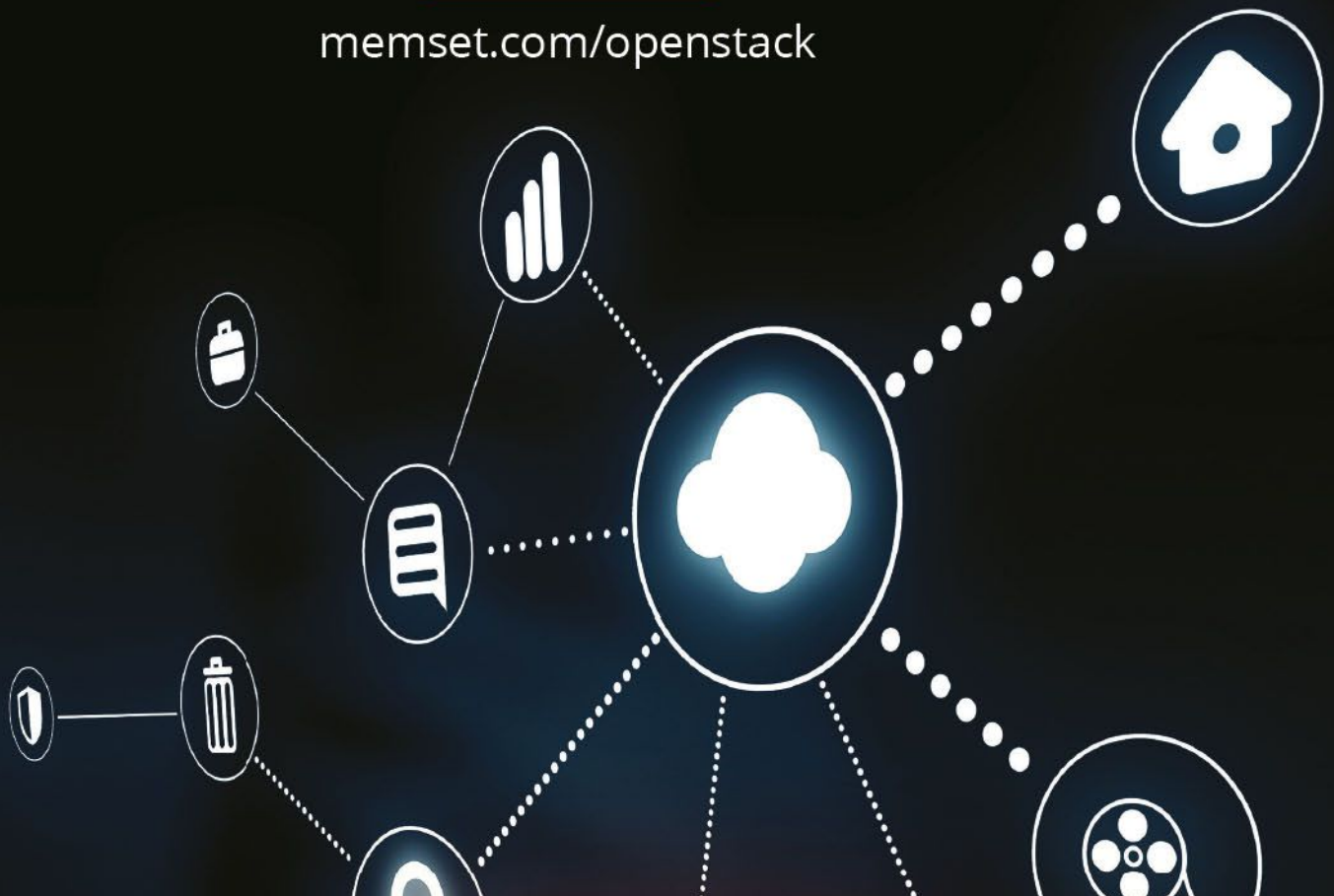
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STUFF I LIKE



LYN MULDROW

Web developer

www.lynmuldrow.com

CANVA

This graphic design software is so easy to use for various projects. I love how quickly I can mock up a design with the right dimensions – great for Facebook posts. It's also a good tool for teaching design – there are lots of free features, suitable for tutorial projects.

canva.com

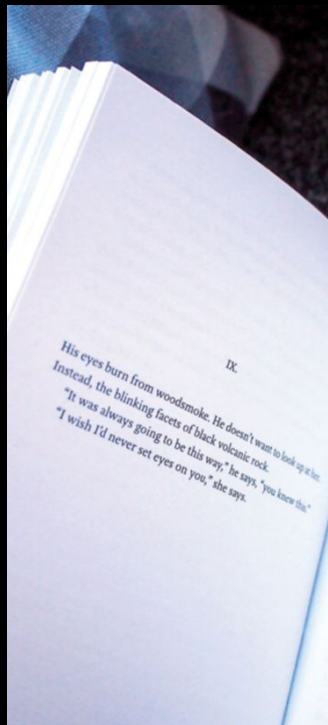
THE STOCKS

I'm always on the hunt for good, free stock images and design resources. The Stocks has all your favourite free photo and design resource sites in one place, surrounded by a slick UI with filters for fonts, videos and more. I love the loading screens.

thestocks.im

FREE CODE CAMP

As an educator, the easiest way to get students excited about programming is by encouraging them to jump in. Free Code Camp, an open source codebase where you can learn how to code (and help others), is a great starting point.

freecodecamp.com

NOVEL WRITING

This month... Ash Huang explains how writing her own novels has helped her embrace creative uncertainty

★ BEYOND PIXELS

> As a child, I was once granted special permission to take 24 books home over summer break. I read them all, and had to go to the library to avoid being story-less for the last few weeks before school started.

As I got older, design school kept me busy. But after graduating I returned to reading voraciously. Many books later, I felt the urge to take my love of the written word to the next level. I wanted to read a particular kind of book, one I had trouble finding. I decided I'd try my hand at writing my own. To date I've published one novel, and I'm working on number two and three.

My design education has come in handy more than once, because the process of writing and design is much the same. For instance, there are twin concepts like contrast (a dark night makes a bright day brighter), hierarchy (don't describe the table if you want people to look at the moon) and craft (some sentences work better than others).

As with design, when I feel stuck or confused I leave writing alone. I believe in synaesthesia. New ideas come from a fresh point of view – I try to keep up with the latest apps and read a book a week, but find inspiration elsewhere. I knit and go to concerts when I design interfaces; I watch TV shows and visit museums when I write books.

For each novel, I have a playlist and a visual moodboard to jolt myself into a working mindset.

Writing books has also helped me embrace creative uncertainty. As designers, we often build off something that exists rather than starting from scratch. A blank page affords opportunities to build a solid base, but it's both exhilarating and scary to face the void. Doing so has made me less afraid, when I'm designing, to strip away old dogma that might not serve a product.

Lastly, writing confirms the value of the message in everything we make. We have to be relentless in refining our stories and keeping big ideas neat. A book can explore 100 themes; a product can do 100 tasks – but a lack of focus will make an experience confusing and ineffective. Creative pursuits, no matter the medium, are additive. Being a better writer makes me a better designer, and vice versa. If you're thinking about it, do it! Write 1,000 words a day from January and you'll have 300 pages by March. **■**

★ PROFILE



Ash (@ashsmash) is an artist, author and senior experience designer at Adobe. Find out more at ashsmash.com



★ NEED LIST

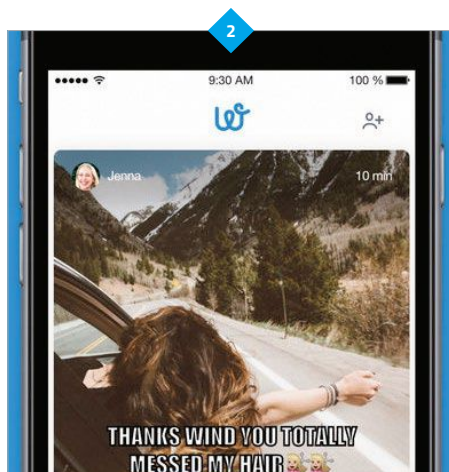
STUFF WE WANT

Small objects of design wonder: from a quick GIF-maker to a guide to organising any online mess



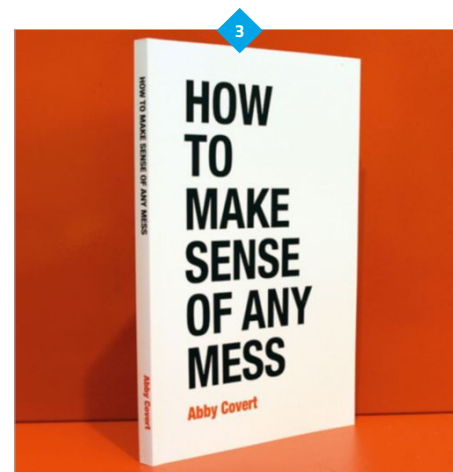
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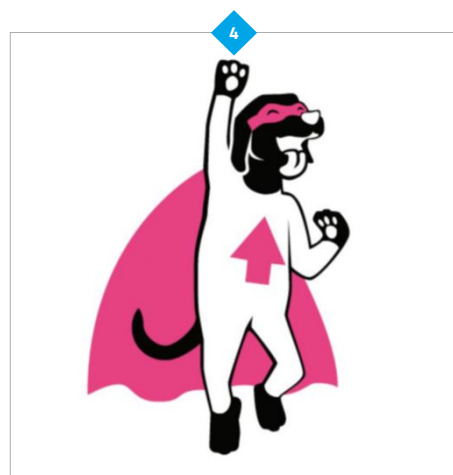
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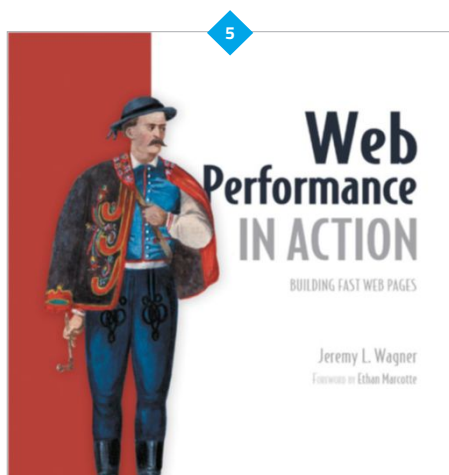
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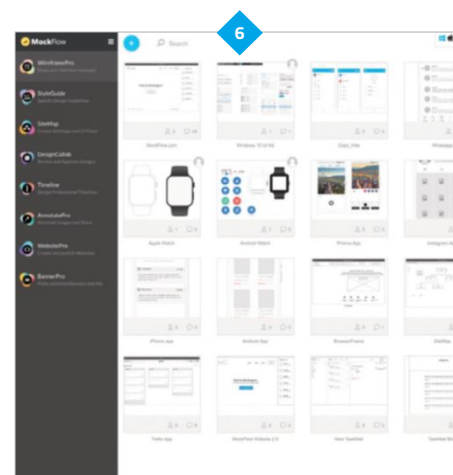
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MOCKFLOW

VARIOUS

What we think

(1) Jeremy Keith's web book (or 'wook', as he would prefer you didn't call it) is part informal history of web design; part handy toolkit; totally free (netm.ag/keith-291). (2) There's no better way to convey how you're feeling on social media than a GIF, and Whom (netm.ag/whom-291) is a simple way to create your own. (3) As everything we build seems to get more complex, information architect Abby Covert shows you how to clear the clutter (abbytheia.com/makesense). (4) Just like its colourful canine mascot, JavaScript uploader Uppy (uppy.io) can 'fetch' from a variety of locations, and will love you unconditionally. (5) Jeremy Wagner's latest guide (netm.ag/wagner-291) is packed with advice to ensure your sites stay smooth. (6) Online wireframe tool MockFlow (mockflow.com) lets you draw and collaborate on UI mockups in less time.

**NEXT
MONTH**

MASTER MOBILE DESIGN

From effective onboarding to balancing chrome and content, we reveal the rules of great mobile design

PLUS

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that will push the
web forward

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EVENT GUIDE

O'REILLY DESIGN CONFERENCE

DATE: 19-22 March 2017

LOCATION: San Francisco, US

Attendees can enjoy four days of training, tutorials and conference sessions with interaction and UX designers and product designers at this wide-ranging event.

netm.ag/oreilly-291

JAZZCON.TECH

DATE: 22-24 March 2017

LOCATION: New Orleans, US

The makers of the Connect.Tech conference cook up a three-day web- and JS-development binge with workshops covering Angular, React, CSS3 and more.

www.jazzcon.tech

BULGARIA WEB SUMMIT

DATE: 7-8 April 2017

LOCATION: Sofia, BG

Aral Balkan, Ada Rose Edwards and Harry Roberts are among a list of speakers spanning 20 countries and four continents at this sold-out event.

bulgariawebsummit.com

FRONT-TRENDS

DATE: 24-26 May 2017

LOCATION: Warsaw, PL

Central Warsaw plays host to the seventh issue of this popular frontend conference, featuring Maciej Cegłowski, Lin Clark and Jack Franklin, among others.

2017/front-trends.com

PIXEL PIONEERS

DATE: 22 June 2017

LOCATION: Bristol, UK

Gone but not forgotten, net's erstwhile editor Oliver Lindberg has launched his own conference, aimed at bringing a concise one-day package at a fair price.

pixelpioneers.co



AWWWARDS LDN

The first London Awwwards conference had it all: aesthetics, ethics and humour, writes **Shaun Dickie**

★ EVENT REPORT

DATE: 2-3 FEBRUARY

LOCATION: LONDON, UK

URL: conference.awwwards.com/london-2017


➤ At the first Awwwards conference to be held in London, visionaries, thought leaders, top agencies and designers came together to share, provoke, reflect and inspire. Held in the historic surroundings of London's Grand Connaught Rooms, the magnificent setting was matched by a multitude of talent and ideas. As well as being arranged by Awwwards, a part of the conference is an actual awards ceremony.

Interestingly, more than one speaker talked about the ethics behind the products we make – perhaps a reaction to the shock appointment of Donald Trump as US president. Both Oliver Reichenstein and Drew Huddleston emphasised that we have an ethical responsibility when it comes to how we craft our digital experiences, and must always question whether we should make these products at all.

Nicki Sprinz also brought ethics to the foreground. She spoke about ustwo's long-term investment in digital products that can make significant changes to healthcare in our society, rather than just one-off charitable projects. Another personal favourite that

highlighted an ethical issue was Keiichi Matsuda's intriguing, scary and overwhelming *Hyper-Reality* film, which depicts a future in which physical and virtual realities have merged.

But the conference wasn't only about ethics – there was also a clear focus also on aesthetics. Aude Degraat gave a very satisfying deconstruction of beauty in digital design. She discussed how "digital beauty is an evolving language", and how digital design trends come together with new technological possibilities – and while these may just seem like 'trends,' they form part of our toolbox as designers.

The humorous high-point of the conference was the ever-offensive and entertaining Mr Bingo, who offered insights into how to work for people as an artist. The event also ended with a beauty – Seb Lester's presentation of his work, and a glimpse into his elegant world of calligraphy and type design. Encouraging us all to believe in ourselves, Seb provided an inspiring experience for all. 

★ PROFILE



Shaun is a design lead at Hello Group (www.hellogroup.com), a strategic design company based in Copenhagen

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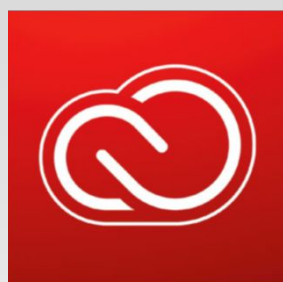
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VOICES

Opinions, thoughts & advice

* BUSINESS

FIND YOUR FIRST FREELANCE CLIENT

Dave Ellis shares his technique for building your contact base when you first go it alone

> Without doubt the biggest stumbling block to starting a freelance career is attracting your first client. Most people who are considering making the move to freelance are hesitant to make the jump without that first client on board. It's perfectly understandable to think this way as it's a tricky situation, especially if you're still in full-time employment.

The problem with winning that first client is the work involved with getting them on board. Despite having no previous association, you have to get them to the point where they understand what you're offering and want to use it. This process isn't usually achieved with a single interaction, and for those that haven't already started on their freelance path it can be difficult to manage. Time is at a premium, and opportunities are limited by time.

USE YOUR CONTACTS

One avenue that is often overlooked is your own network. It's really easy to be tempted by the multiple other marketing opportunities available to you, and to completely forget about your own personal



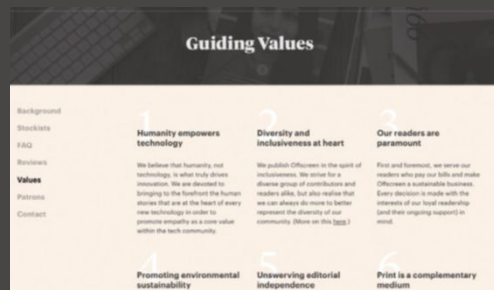
BRIDGING ART AND TECH 26

There's a deep chasm between the worlds of design and development. **Natalya Shelburne** explores how we might find a way out



INTERVIEW 30

We talk to Republic of Quality's **Steve Fisher** about the power of the design sprint and how it's still an evolving strategy



VALUES 35

In the latest in series of articles exploring the design of business, **Christopher Murphy** looks at how to find your company's core values

network of contacts. You can quickly find yourself looking at highly competitive marketing channels that are costly and time-consuming to pursue. Here, you're just another player fighting for attention and starting from scratch.

The first port of call for any new freelancer is to look at your own network. At this stage you may be thinking that you don't have one – you do, you're just not aware of it yet. You've spent years developing it without even realising, and it's full of opportunities.

The beauty of your own network is that it's yours. You have the competitive advantage here; no two freelancers have the same network. It's not a level playing field and the odds are stacked heavily in your favour.

START WITH A LIST

Start by making a simple list. Include people you know, from friends and family to colleagues and people that you've worked with in the past. I keep mine in a very simple spreadsheet where I can add additional notes to each contact.

When you first decide to take the leap of faith into a freelance career – or perhaps even before you take that first step – you should make everyone on your list aware of your plans. You can do this face-to-face, using a social or business platform, by email, or any other method you think is appropriate.

I'm not talking about a single one-size fits all message here. Think about how you typically talk to the specific person you would like to inform. If you normally talk face-to-face then you need to communicate the same way to get the message across effectively.

This goes for every single message. Consider the best way of getting the information to that person. If you approach it on a one-to-one basis it's not going to feel like any other piece of marketing activity, and you'll be much better thought of for it.

Explain exactly what you're going to be doing, what kind of clients you're looking for and when you're planning on starting. Give as much information as you can without overloading them. This is your



The first port of call is to look at your network. You may not be aware of it, but you've spent years building it and it's full of opportunities

first piece of marketing and it's one of the most powerful that you'll ever create.

WIDEN YOUR NETWORK

The beauty of marketing yourself to your own network is that it doesn't end there. Because you're marketing your services to people who already know you in some capacity, they're far more likely to share the message with their own network of contacts. This can open up some serious opportunities that you otherwise wouldn't have had access to.

When you recommend someone, you tend to do so because you have first-hand experience or because of something you've been told by a trusted source. All we're doing here is using that simple logic to maximise your opportunities and to

grab that first freelance client (and maybe even a few more too).

NOT A ONE-HIT WONDER

This is an incredibly effective technique that I've used numerous times, and one you can reuse. Throughout your career you'll meet people and make new contacts, and it doesn't hurt to keep them informed of what you're doing and what you can do for them. Staying on top of your contact list and keeping it current is a great backbone for your freelance business and will serve you well. **n**

* PROFILE

Dave (@novolume) is a freelance consultant and digital designer. **net** readers can get 25 per cent off his book *Go Freelance* using the code NETMAG: netm.ag/freelance-291



★ CULTURE

BRIDGING THE DIVIDE

Illustration by Ben Mounsey

There's a chasm between the worlds of design and development.
Natalya Shelburne explores how we might close it

➤ We've all heard of the gap between design and development in tech: the seemingly impossible chasm between creatives and engineers that only mythical unicorns, infamous rock stars and ninjas can traverse. We didn't invent this divide between art and technology, but we can work to bridge it.

The debate is well-versed. When photography first emerged in the painting-dominated art world, it was quickly rejected. Despite photographers' efforts to be seen as creatives, the art world's message was clear: snappers were not artists, they were technicians. Cameras were pieces of technology wielded by operators whose creative skill was inconsequential. If you wanted to be a 'real' artist, you were better off with a brush. Does this seem familiar?

History is repeating itself in tech, and it's to no one's advantage. Somehow, the reasonable separation of disciplines and expertise has morphed into something more sinister, dividing people into binary categories of designer or developer, right brain or left brain, CSS or JavaScript, art or maths, creative or non-creative.

The dichotomy is unnecessary hyperbole, and it is harmful to the entire industry. Engineers are hearing they are not creative enough to step outside the code, designers are told their artistic minds can't possibly grasp the logic of engineering, and fine artists graduating from some art schools are still taught the same old message that oil painting is the one true way.

We're told to pick a side and stick with it. We find ourselves rewarded for reinforcing these stereotypes

and punished for going outside imaginary lines. As a consequence, multitalented people are being siloed into narrow roles and definitions, further deepening and widening the chasm – while we collectively wonder why we struggle with collaborating and communicating across disciplines.

PRESSURE TO PIGEONHOLE

I have experienced this subtle yet powerful messaging first-hand. When I shared that I was intending to move on from design in order to pursue frontend development full-time, some concerned parties asked whether I would miss being creative, while others cheered my ascent to unicorn status.

That was the moment I truly realised how pigeonholed and misunderstood those early photographers must have felt. In my past career in the nonprofit art world, being multitalented was at the core of my professional identity, but I felt the pressure to leave it behind as I entered tech. All the well-intentioned advice seemed to add up to one thing: I should streamline myself in order to catch up and keep up with the fast pace of tech. I'm glad I didn't listen.

Let people be multidisciplinary if that's what they choose. Does this mean that all designers should code and all engineers should design? Again, that is hyperbole: all I ask is that we don't make people specialise for arbitrary reasons.

These divides are limits that hold perfectly capable and curious people back from learning to do something

- ▶ that they'll enjoy. If you code, you can learn to be great at design. If you're a designer, you can learn to code. How many brilliant moments of collaboration are lost because we keep hanging on to these myths that we only get to do one of these things?

Instead, I propose a cognitive shift away from binary thinking and a call for the blurring of the lines between disciplines. Indulge your curiosity, take the time to learn something outside your bubble, and be kind to those doing the same. Yes, this means stepping outside our comfort zones, feeling like complete novices again, building a shared vocabulary, and bridging the gap between design and development one step at a time.

It all comes down to respect. What happens when a designer and an engineer, each with their own priorities, different perspectives and separate skillsets, need to collaborate on a task? If the answer is friction and frustration, followed by radio silence, your project will become unmaintainable in no time.

This ignorance makes it effortless to discount the work of a designer as frivolous.

For example, take picking a colour palette for a website. It seems so unbelievably simple at first, but it's only once you really try to theme a site that you realise just how open-ended and exposed your decisions will be. There is no compiler throwing an error or tests failing if your colours clash. Add in a client, and you can really be in for a fun time. You'll hear 'I'll know it when I see it' and 'Can you make it pop?' Designers are experts in visual communication and each decision is full of information and intent. It only looks random and arbitrary to those who have never tried it.

Harmful stereotypes plague engineering, too. The idea that you have to be an antisocial, logic-driven robot to be an engineer dismisses the creativity required in that job. As developers we work on a glowing canvas capable of any colour, which can fluidly change dimensions, or shape an experience that can transport our audience

The myth that some people are just born creative isn't doing designers any favours – it devalues the discipline it takes to excel. Until someone tries to solve problems themselves, design appears deceptively easy

We live in interesting times. Every company is a tech company, to an extent, and the ability to iterate quickly is business-critical. With React inlining styles, and CSS adding new features, it feels like we are at a crossroads. The push and pull between ideas and methodologies is nothing new, but the tensions between design and development feel like they are at an all-time high. No wonder we are seeing the biggest sources of conflict erupt at the seams between the two.

TESTING STEREOTYPES

Because CSS is a tool used by both designers and developers, the state of your frontend code is the canary in the coal mine that can provide insight into how well your team is actually communicating. Are engineers commandeering the design patterns and burying them in JavaScript, telling designers they should learn to code? Are designers 'throwing designs over the fence', frustrated at the way engineers are 'butchering' their design systems? It's time to get to work.

There are many legacy opinions standing in our way that need to be addressed. The myth that some people are just born creative isn't doing designers any favours; it devalues the deliberate practice, study and discipline it takes to excel. Until someone tries to solve these problems themselves, design appears deceptively easy.

into other worlds and connect people through time and space. Developers use code to give ideas shape: some are made visual; others live in the abstract. It only looks uncreative to people who have never felt the magic of writing their first 'Hello, world'.

A QUESTION OF RESPECT

It comes down to respect. It's hard to appreciate someone's skills when you know nothing about them. Instead, we need to move past binary thinking and the myths and stereotypes that keep us entrenched in our respective camps. Instead of doubling down into what you already know, take the opportunity to reach out and understand the constraints, concerns and requirements of someone you work with. Do this with the intent of learning about their mental model, finding common ground, establishing a shared vocabulary, and removing barriers to collaboration. You'll become a much better member of your team ... just don't be surprised when people start calling you a unicorn. ■

★ PROFILE



Natalya (@natalyathree) is a software engineer for the *New York Times*. In her spare time she is an artist, teacher and designer. www.artist-developer.com



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STEVE FISHER

Words by Oliver Lindberg Photography by Dan Barham

The founder of the Republic of Quality reflects on design sprints, diversity, and why too many tools are killing our focus



INFO

job: Founder, Republic of Quality

w: republicofquality.com

t: @hellofisher

➤ 2016 was the year of the design sprint, a five-day process for solving, prototyping and testing design problems, first brought to prominence by Google Ventures. *Sprint*, the book by GV's Jake Knapp, became a New York Times and Wall Street Journal bestseller, and teams all over the world started adopting the framework to improve their products and ultimately their businesses. Steve Fisher, the founder of Canadian UX, content strategy and web technology consultancy the Republic of Quality, however, noticed one thing was missing from the sprints he saw: content.

"The GV guys have been writing about design sprints for four or five years, and we've been running our own sprints for about as long," he explains. "There are big benefits. A sprint allows you to leap ahead and see what's possible without having to spend too much effort and time. But we found people weren't really talking about content design and how that would help the product."

QUICK PITCH

Initially, the clients that Fisher pitched the sprint process to were sceptical. It seemed

expensive. You needed to allocate four to six people and up to a whole week for it to be successful. However, they soon saw the advantages – especially in content and design, which are at the core of the Republic of Quality ethos. "Every single time those companies would see a huge saving and gains by the end of the project, because we had done sprints," Fisher enthuses. "Once that word gets out, it's pretty compelling."

The team tackles a lot of tricky problems in large organisations – the key, Fisher asserts, is working together. "There are so many times when teams are separated physically and departmentally. Often, the only time that people of different disciplines come together is when they hand off their work. Getting out of our silos and learning from each other was key for bringing content and design together."

Interdisciplinary collaboration is one of the big benefits of the sprint methodology. The team might consist of a UX professional, a content strategist, someone from IT or a developer, a marketing person and the business owner or someone who has the authority to make business decisions. These

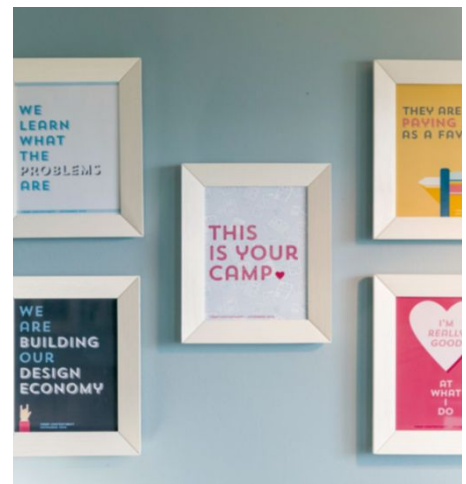
teams are a mix of client and vendor or in-house teams.

The first thing Fisher does in the sprint is to establish a framework that allows everyone to work better together as a team, so they can come to an agreement rather than having to compromise on decisions. "Compromising is easy," Fisher explains, "but it leaves behind this terrible underground river of conflict." Fisher will explore the theme of conflict further at Generate NY in April: netm.ag/generateNY-291.

In contrast to GV's strict approach, Republic of Quality's sprints tends to vary in length, and will often last just three or four days. "We focus a lot more on content design, to really understand the complexities," he explains. "We might spend the first day digging into the 'who are you?' and 'what's the problem here?' Then it quickly becomes about sketching out ideas, so at the week's end we have a working prototype to test."

GOVERNMENT GOALS

Fisher and his team work with a lot of provincial governments and large municipalities in Canada, as the sprint approach is





beneficial to organisations that have complex problems. They're currently involved in running ongoing sprints for products owned by mid-size governments. "We come in every couple of months and run a shorter sprint with them – two or three days at a time – to solve a new problem. It's really great to see their web, IT, and marketing teams participate and a government progress at a relatively quick rate."

The scale of the tasks that Republic of Quality faces can be immense. A recent project saw the team tackling a four year-old site that encompassed 20,000 pages and more than 100 content authors. With such mammoth projects, sometimes the result can be completely different to what they initially anticipated. For example, when working on a sprint to make a building permits app responsive, the team discovered that particular app needed to be combined with three other apps in order for people to really want to use it.

"If we bring in external people, who are actually using products, to test and give feedback during these sprints, then we can find the real problem we're trying to solve.

That can be discovered quickly, but only if we bring in diverse perspectives and people from outside your group. We walked away having developed a much better product. It was a turning point for that government."

LITTLE AND OFTEN

The prototype towards the end of the sprint is often created with Bootstrap or something similar, which is user-tested the following week. Fisher's approach to user testing is to test early, often, and in bite-sized chunks.

"If you test more often with smaller groups, you'll discover 80 or 90 per cent of the issues right away. When your team witnesses someone struggle or succeed with your product, it's very powerful. It changes hearts and minds."

A personalised approach can also have a big impact. "We like to go to people when we can, see them try something out and walk through everyday tasks in their environment, or make it as familiar as possible. If I have a MacBook with me and someone's used to a PC, I'll use a regular mouse and change the scrolling to what they're used to. Little details like that make a difference when user testing."

"Getting out of our silos and learning from each other is key for bringing content and design together"



Fisher argues that often we get too bogged down in our tools, and sees the current fragmentation of tools as a big problem for web industry. The likes of Grunt, gulp and webpack might work for some people, but don't fit well for others.

"There's this sense you have to learn all the things, now, which can result in too much distraction," Fisher laments. "It's essential to be a lifelong learner, but we also have to learn focus and accomplish our tasks. There are so many things out there for us to know and learn and keep track of."

He suggests designers and developers view the situation as an opportunity to discover products that will help them in their workflow. "We should talk openly about how we work. If we share with others what kind of system we develop with, for example, it will help our community learn."

EMBRACING DIVERSITY

Another, perhaps more persistent, issue plaguing the web industry is its lack of diversity. "It's probably not going to change for a long time," Fisher sighs. "We don't have nuanced teams because we only have a



► narrow amount of voices in a lot of companies, and especially in leadership.”

Fisher points out that the different voices, perspectives and ethnicities represented was what attracted him to **net**’s Generate conference. When conferences embrace diversity, everyone who comes across that event – in person, on the website, on social media – can see they themselves are represented on that stage.

“White dudes in the tech and design industry never go through ‘rep sweats’. They never feel they’re not represented,” Fisher notes. “We’re represented everywhere! If you’re a person of colour in America, you’ll have a different experience in life, and you won’t have the same experience of privilege.”

TAKING ADVICE

The web industry needs to continue to acknowledge its diversity problem. “Most people of privilege, white folks like me, get more opportunities more easily. I’ve seen that in my own life. It’s important I use my privilege to help the less privileged, the vulnerable in society, and not myself.”

It’s no surprise diversity is a crucial ingredient of Fisher’s own conference, Design & Content (designcontentconf.com). But this was not always the way. “When we organised the first conference, we had more women than men speaking, but one perspective producing the experience. A white perspective, which resulted in 80 per cent of the speakers being white. We were well intentioned, but we messed up,” Fisher admits. “It wasn’t until someone challenged us on the lack of diversity in our speaker roster that we recognised we needed to do better.”

Fisher decided to address the problem by putting together a diverse production team for the event, including people from a range of gender perspectives, backgrounds, ethnicities and age groups. Everybody has an equal voice and everyone is paid for their time. The process is documented on the studio’s blog: netm.ag/RoQ-291.

“It changed everything for us. One of our team has mobility issues and attends the conference, so her perspective helps us plan for others. I wouldn’t have known; my biggest mobility issue is that I’m 40!” Fisher believes that introducing a similar focus on diversity and inclusion into tech firms would

make a big difference to how these companies work. “We’d have the possibility of teams that represent a truer picture of diversity we see in the world,” he says.

Diversity, it turns out, can improve every aspect of our industry, from product testing to

conferences. The more diverse your company, the more views you can use to inform your product design and content decisions, which ultimately will result in happier (and more) customers. ■

“We need teams that represent a truer picture of diversity we see in the world”

Next month: Information architect, speaker and author Abby Covert



★ THE DESIGN OF BUSINESS

VALUES

Christopher Murphy discusses the importance of establishing your brand's core beliefs



INFO

Job: Writer, designer and educator

t: @fehler

w: www.tinybooks.org

➤ In the third article in my series exploring the design of business, I'll look at the importance of identifying your business's core values and how, by doing so, you can establish well-defined principles that guarantee it stays true to its vision. In my teaching and consultancy, one of the first elements I focus on is the importance of establishing core values. Identifying what you stand for – and equally, what you don't – is important to keep your business anchored around a core set of beliefs.

It's critical to tease out these deep drivers, the 'who' and the 'why', that underpin your business. I believe a business built around core values has more chance of success because it ties back to its founders' deep sense of purpose.

As Nesta, one of the UK's foremost innovation charities, puts it: "It's essential that you align your business and how you run it with your values. These are not necessarily morals or ethics, but simply the things that make you feel truly alive and passionately committed to what you're doing." By aligning your business with your deeply held beliefs you ensure it is an extension of what you believe – firm foundations on which to build.

"Create a set of guiding values you can refer to for big decisions," advises Kai Brach, publisher of

Offscreen magazine. "All of your efforts should be in line with them." Your values will help realise your story, giving it a stronger sense of meaning.

WALKING A TIGHTROPE

It's important to stay true to your values and ensure your business remains consistent with your founding principles. In our connected world, customers have access to a whole wealth of background information about you and your company. If you claim to be community-focused, but your actions prove otherwise, your customers will soon realise your values are nothing more than empty promises.

An old (but still relevant) example of this is the story of Enron, an American energy and services company that was built on the values of 'communication, respect and integrity' – except in reality, it wasn't. The New York Times told Enron's empty story well, in 'Enron's Vision (and Values) Thing' (netm.ag/enron-291). It's an article that's well worth reading for a lesson in how not to approach the important topic of values.

Values aren't an exercise in marketing; rather they should be core beliefs that you hold true. *Offscreen* magazine's Guiding Values page (netm.ag/offscreen-291) list its values: unswerving editorial independence, and encouraging openness and transparency. These establish what the magazine stands for and, at a deeper level, why it exists.

I have no doubt that Brach spent a considerable amount of time distilling these core beliefs. The result is an independent magazine that has stood the test of time and will continue to do so for many years to come.

Everyone's values will be different. It is, however, important that you spend some time defining yours and those of your business. By defining your core values as you embark on your business journey, you'll establish a firm foundation on which to build a business that lasts. **n**



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*Q&A

JESSICA LORD

The web developer argues the importance of creating ideas through open source



INFO

Job: Open web developer

w: jlord.us

t: @jllord

net: On your website you describe yourself as ‘an urban designer turned open web developer’. What does that involve?

JL: It involved a complete career shift. I’ve always wanted to work with technology and was passionate about architecture and urban design. After college I worked in the Urban Design Technology Group within the City of Boston’s Planning Department. This was a great spot to get to do both urban design and work with software to map, render and visualise changes in the city.

I eventually wanted technology to be a bigger part of cities, so I left to do the year-long Code for America fellowship in San Francisco. It was during this year that I fell into the world of open source and, well, fell for it. At the end of the year I decided to stick with web development because I loved being amongst people who put their work out in the open and I loved the pace and self-sufficiency of being involved in the open web.

net: What projects have you worked on recently?

JL: Before leaving GitHub, I started the Electron team. Electron is the library used by GitHub’s text editor Atom and it allows developers to build desktop applications that work on three systems (Mac,

Windows and Linux) with one codebase of HTML, CSS and JavaScript. It had been a dependency of Atom but is now a standalone project and team. It’s a really great library that’s fun to work with. It combines Node.js with Chromium and allows you to use Node.js in HTML – or another way to look at it, it allows you to build HTML interfaces for your Node.js applications.

Outside of work I have some side projects that I continue to work on. One is Git-it, an application for teaching Git and GitHub to beginners. It has a robot (server) named RepoRobot that collaborates with you and merges pull requests. Over 12,000 people have used it, which blows my mind!

I also have an older library, Sheetsee.js, for visualising data from Google Spreadsheets, which I plan to update. During my Code for America year I became obsessed with spreadsheets as lightweight databases. I’m still obsessed really, and it’s definitely time for some updates to it!

net: You recently left your job at GitHub. What did you do while you were there?

JL: At GitHub I worked on frontend projects scattered across the site and subdomains. I then wrote Node.js on the Atom and Electron teams.

Prior to my Code for America fellowship I’d tried to bring about more open sharing in the city I worked for. At the time I didn’t know about the community around open source, but Code for America showed me how active and amazing this community is and GitHub was the tool everyone was using to share their work. I joined GitHub because I believe it is an incredible tool and a massive library of knowledge – which is so exciting!

net: You trained in architecture. Do you think there is any crossover in terms of skills?

JL: I do think there is a lot of crossover. Architecture gave me a solid foundation in design thinking and structure. Urban design allows for working with the time and experience of users and I think the same can be said for web development.

net: You’re passionate about open source and recommend putting everything on GitHub. What’s so important about open sourcing your work?

JL: Ideas breed other ideas. The more ideas we have and the more diverse they are, the better the advancements we can have as a society. I believe opening up as much work as you can – unfinished and messy as it may be – helps to provide a Petri dish for new ideas. There’s always something to learn from and you never know where the next great idea may be sparked from. ■

* CULTURE

ARE THERE TOO MANY JOB TITLES IN WEB DESIGN?

A bewildering array of job titles awaits anyone checking a web design recruitment board – and the UX section in particular. So which ones need to go?

**LIZZIE DYSON**UX designer, Rentalcars.com

@Lizziedyson



While the industry is evolving, we should aim to streamline job titles and help others understand our roles. As UX leaders we have the potential to be industry disrupters and in order to do this we need to create a united effort for consistency. This will enable us to facilitate the change and fully embed ourselves into the product lifecycle. When we no longer have to explain UX to our colleagues, that's the time to be creative with titles like 'UX guru' or 'executive unicorn'. But until then, let's keep it simple.

**JESSE GOLL**Design consultant, Constant Contactvividmatter.com

The segmentation of design roles has been necessitated as web design has matured. Specialised roles are required to break up large tasks and as such, job titles have grown to reflect these focused roles. I would, however, like to see some of the pseudo-titles ('design ninja') done away with, as they do little to convey expectations on what the design expertise is, and in most cases just introduce confusion.

**NIKKEL BLAASE**Product designer, XINGnikkel-blaase.com

Over the years, the UX design profession has dealt with a lot of emerging roles and an increasing number of new, and sometimes rather confusing, job titles. Most of these often describe just a single role – however, designers are much more than their job titles suggest and often work between roles. This is why I think confusing job titles might vanish in favour of two main UX disciplines: interface designers who care about the graphical representation of the product and aim to make it beautiful and easy to use; and product designers who care about the product as a holistic ecosystem, solving core problems, growing the user base, and generating business outcomes.



ODETTE COLYER


Co-founder, Super User Studio
www.superuserstudio.com

 Job titles should always be taken with a pinch of salt. However, the varied titles we see in this industry reflect the multidisciplinary nature of what we do and the forever-changing technological landscape in which we do it. It's likely even more types of digital designers and job titles will emerge, so it's important for both employers and designers to communicate the skills they require, and their experience and strengths. That said, the worst titles are those that try to cover too many related, yet disparate disciplines or skills within a single role.



BENJI MOSS


Designer, Mitrol
mitrol.design

 There are some outlandish job titles in web design, but really it's the most natural thing in the world to want to define our own position in the pack – especially in an industry where roles are constantly evolving. In my experience, the most engaging designers wear humble labels. 'Designer' is often the most accurate term for a very broad set of skills. The only job title that I'd outlaw is 'junior designer' – it seems to me that 'junior' is intended to limit their role; I don't see any value in restricting someone's creative ambitions in that way.



JACK SHEPPARD


UI and web designer, CoopDigital
www.madebysheppard.com

 Designer, web designer, graphic designer, UI designer, UX designer, product designer. These are all words I've mumbled to the barber when, inevitably, he asks, 'So what do you do then?' Job titles reflect responsibilities in a company or on a project, and the danger is that they put people in a box. Skills and experience are transferable, and some of the best work you do will be looking at something new and learning, however uncomfortable it might feel. Job titles let people say 'Oh, no. I'm not a ...' in a situation when they ought to embrace it and run. In an ideal working environment, everyone has equal responsibility to get the thing done. Get rid of superfluous 'design' job titles. You are a designer.




AARON WEYENBERG

UX lead, TED
aaronweyenberg.com


 The proliferation of job titles is a product of three factors: the pressure to sound fashionable, relevant and future-facing; the evolution and diversification of technologies over time; and hiring manager fantasies of covering multiple core competencies with one new employee. I have three wishes with regard to both what people call themselves and who they are seeking to hire: 1) Be specific 2) Be honest 3) Be unpretentious.

RESOURCES


JOB TITLES

 Written in 2013 but still very relevant today, Chris Coyier's post 'Job Titles in the Web Industry' (netm.ag/job-291) is a concise, clear-cut and easy to follow rundown of some of the major job titles in the web industry. There's some lively debate in the comment section below, too.

NAVIGATING THE OCEAN

 'How to navigate the ocean of UX job titles' is a post from UXbeginner.com that delivers exactly what it promises (netm.ag/ocean-291). It's a relatively short read designed to help you navigate, understand and evaluate the many UX job titles and descriptions you are bound to come across in your career.

UX VS CX

 Saurabh Kumar doesn't pull any punches in this short, funny post entitled 'A stupid conversation about UX vs CX' (netm.ag/UXCX-291). It's written in the satirical form of a conversation between two people, one of whom is a UX designer trying to explain his job title and how it relates to what he does.



★ CULTURE

SCALING DESIGN

Alastair Simpson explains how his company effectively scaled and repositioned its design team

➤ Design and design thinking is hot right now. In the last five years, new and traditional enterprises have swallowed up a long list of design agencies. Facebook bought Teehan + Lax and Accenture acquired Fjord, to name just two examples. In that same time, IBM grew its internal design team to over 1,000 staff. It seems there has never been a better time to be a designer.

But buying a design agency or hiring in a design team doesn't immediately change years of cultural habits around product development. Effecting change around how companies use designers is hard. As a former consultant I would go into many large organisations who told me how much they valued design. Yet the internal design team was still treated very much as I was as a consultant: a 'service' to the product development teams, brought in after the fact to add the gloss.

At Atlassian, our design team has grown from six to around 136 in the past four years. When you grow a team that quickly, there are numerous issues that come with it. The most important challenge we face is how we make design truly count. You could have the best design team in the world, but if

your company doesn't truly value design, it doesn't matter. It doesn't matter because your design team will still be treated as a service for the product development teams, rather than an integral part of how you build great products.

If you don't have that right from day one, everything else you do to make your design team successful can just be wasted effort. As John Maeda says, "Design is not a magical switch that gets turned on inside a company. It's a conscious effort on behalf of the CEO and executive team to make design matter." These are some tactics that helped us get there.

CODIFY DESIGN

One of the biggest wins for us as an organisation was how we codified design and design thinking across the organisation. Atlassian has a very open intranet with a culture of sharing, learning and collaborating. We used that to our advantage.

Quite often, non-design disciplines see the design process as a black box. By codifying our frameworks and sharing them, we aimed to debunk those black box myths. We wanted to show teams where they were

going, before we took them there. This creates a much more open and collaborative environment to be creative in.

All of these activities are wrapped up into an internal 'playbook' as individual 'plays'. This provides simple step-by-step guides for how to run workshops and meetings. It means that anyone, regardless of their discipline, can understand how to run a creative session. It makes our design process inclusive. Educational bootcamps help train staff on how to run and use these different plays throughout the product development lifecycle.

CREATE EMPATHY

Building up the right level of customer empathy throughout all product development disciplines was also vital to our success. We have always had a very customer-centric culture, but as we scaled design, we realised that we needed to create more empathy across other disciplines for all our end customers.

We put a number of things in place to help us with this. We took engineers and product managers out to meet customers. We created a set of persona cards and put them in every meeting room. We started collecting in-product feedback from our end customers, which was then shared weekly with all staff via email. We created a usability testing lab in-house and allowed anyone to watch the sessions live via video conference.

All of these activities were to help us get everyone who builds our products closer to our customers. This helped us shift to a much more experience-driven approach to everything we build.

HAVE AN OPINION

I love this Julie Zhuo quote: "If you don't want design to be treated as a service, you need to have an opinion about what problems are worth solving and why". And it's very true. But the organisation must also actually value that opinion and make it an integral part of the product development process if you want to truly scale design. ■

★ PROFILE

Alastair (@alanstairs) is head of design software teams at software company Atlassian. He is an advocate of using design thinking methodologies to solve complex business problems



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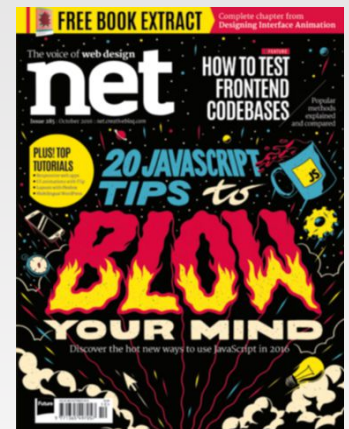
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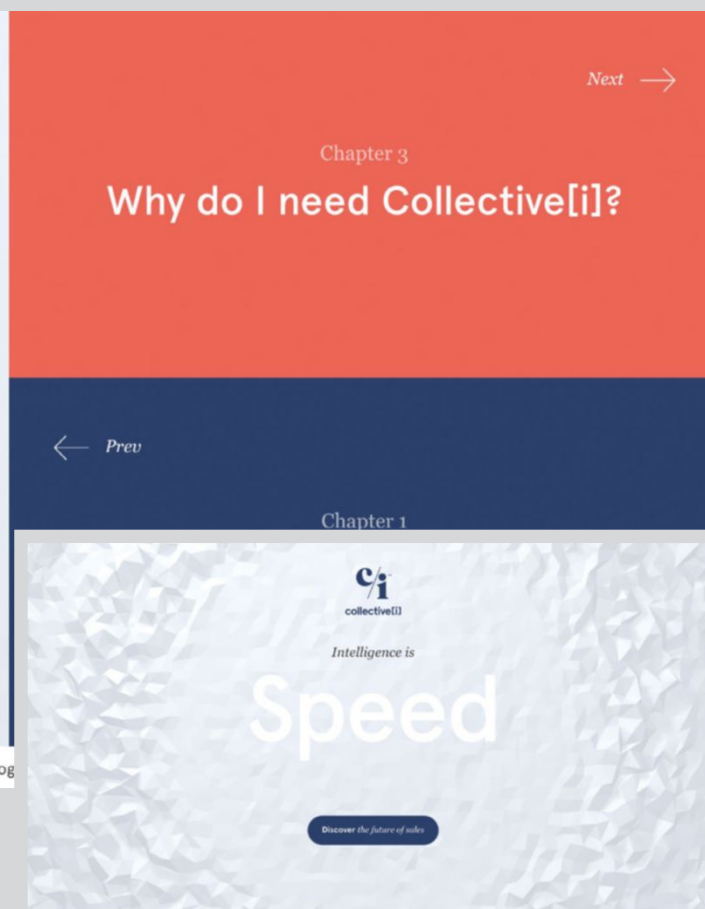
WWW.COLLECTIVEI.COM

Werkstatt www.werkstatt.fr



Collective[i] is a new data tech company that enables other companies to use and share network intelligence. One of the most immediately striking things about its freshly redesigned site is the futuristic background. The movements evoke the tactility of fabric blowing in the wind, while the tessellations are reminiscent of sophisticated 3D models.

Overall the site exudes modernism, with its geometric, modular layouts framed by bold distinct colour, coupled with clever use of white space throughout. Motion is used to narrate and help connect you to the piece, and the animation speed feels tuned towards encouraging you to read the content.



The menu navigation demonstrates what is possible with this craft. On touch devices, swipe down to reveal the menu; swipe across to select a chapter. Each section is defined and memorable, while providing wayfinding via the use of a single, distinct colour. On desktop, scrolling leafs through the chapters with a technique that doesn't feel like scrolljacking.

This level of thoughtfulness comes from French atelier Werkstatt, named after Wiener Werkstätte (Vienna's Workshops), a group of artists that joined forces in 1903 after the Vienna Secession. The movement's motto: 'To every age its art. To every art its freedom' is befitting for a website that speaks to the thematic art of the web.



“This is a whole new way to look at typography”
JESSICA HELFAND
(@JESSICAHSELFAND)

* JQUERY, MODERNIZR, CSS TRANSFORMS

GT-AMERICA.COM

Grilli Type www.grillitype.com

De Stijl my heart (I have a fondness for the graphic, typographic style of early modernism)! I love this site for its quirky playfulness. To me it is exemplary of storytelling on the web, not of web performance optimisation techniques.

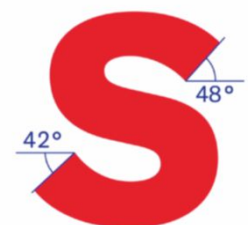
Grilli Type, a Swiss type foundry, has struck gold with the release of its new font GT-America, and this “fun, funny, fresh microsite that takes the idea of a type specimen to the next level” (in the words of graphic designer and critic Michael Bierut). Every detail on the site fits together to tell the story of the font. It’s certainly one of the first times I’ve seen a type site capture the personality of a font with such panache.

GT-America is named after its country of inspiration, the United States. The font combines the sharp rigour of Swiss design with the playfulness of American Gothic. The design is a melange of old Wild West wanted ads-meets-art manifesto, a cross between flags.

There’s so much play going on here, with more than 40 quirky animations by designer Josh Schaub. You can even interact with some of them to bring the illustrations to life. I like the use of animation and video to showcase the incredible versatility in the font: width, stroke, kerning, use. Everything is a storytelling moment, a teaching moment and a learning moment in one.

GT America Compressed	GT America Condensed	GT America Standard
Ultra Light	Ultra Light	Ultra Light
Ultra Light Italic	Ultra Light Italic	Ultra Light Italic
Thin	Thin	Thin
Thin Italic	Thin Italic	Thin Italic
Light	Light	Light
Light Italic	Light Italic	Light Italic
Regular	Regular	Regular
Regular Italic	Regular Italic	Regular Italic
Medium	Medium	Medium
Medium Italic	Medium Italic	Medium Italic
Bold	Bold	Bold
Bold Italic	Bold Italic	Bold Italic
Black	Black	Black
Black Italic	Black Italic	Black Italic
GT America Mono	GT America Extended	GT America Expanded
Ultra Light	Ultra Light	Ultra Light
Ultra Light Italic	Ultra Light Italic	Ultra Light Italic
Thin	Thin	Thin

Stroke ending angles adjust to function optimally in each style.





✱ BACKBONE, UNDERSCORE, CSS TRANSFORMS

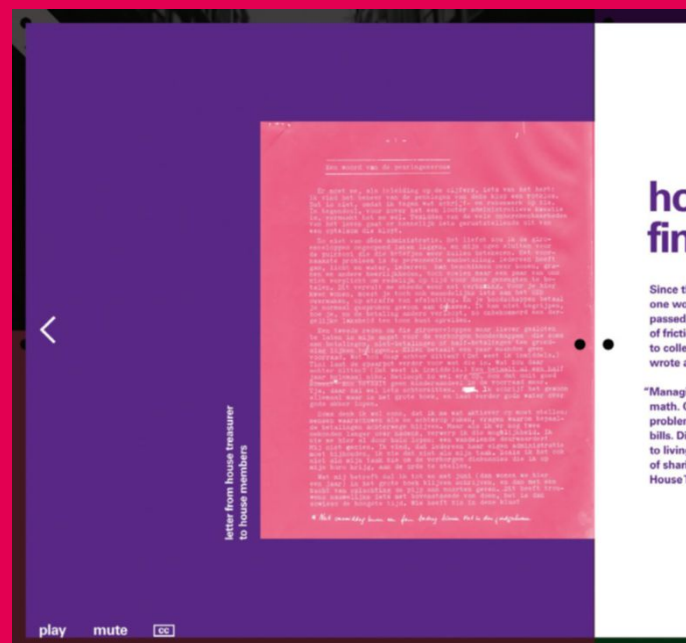
ONESHAREHOUSE.COM

Anton & Irene antonandirene.com

➤ *One Shared House* is a web documentary profiling UX designer Irene Pereyra's experiences growing up in a feminist commune in 1970s Amsterdam. From the moment you arrive, you're not alone: your cursor movements are followed.

The bright, bold purples and striking geometric layout, cleverly used for navigation and storytelling, immediately draw your attention. Instead of relying on trite scrolling techniques, Pereyra and partner-in-design Anton Repponen drew inspiration from the early-90s game 'Where in the World is Carmen Sandiego?' and made use of the bottom screen to subtly expose exploratory content, offering you the ability to define your own level of involvement with the story. I appreciate how seamless it is to jump out of the narrative documentary without disrupting the flow.

Interactions combine with storytelling to deliver a mesmerising, novel experience. Pereyra and Repponen join the ranks of digital storytellers we'll see more of this year. Their boldness in persevering through two years of self-funded and self-initiated work is important: "It enables us to experiment with disciplines and techniques for which there is typically no space in client projects," says Pereyra.



★ GSAP, WEBGL, GOOGLE MAPS APIs

DADA-DATA.NET

Akufen akufen.ca

> Dada Data is a website built to commemorate the 100 year anniversary of the Dada movement. In a shining example of what happens when storytelling, data, art and the web collide, Dada is masterfully reimagined by journalists and web documentarians David Dufresne and Anita Hugi.

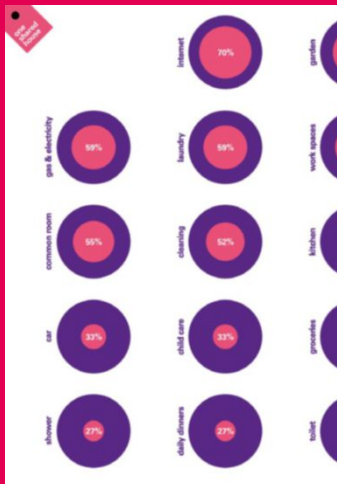
Interactions, sound, tweets, photos and text combine to build Dada-scapes that offer a wink and a nudge to the original movement's spirit. Exploration and navigation is non-linear, without reason or logic. The storyteller no longer solely controls the narrative – once the user takes active part in the

process, they gain control. The element of change (central to the spirit and aesthetic of Dada), is covered through the layout of the content.

Akufen, the Canadian studio behind the project, planned it so the mobile experience would be just as immersive as the desktop one. "It was primary for us to conserve the randomness of the experience," says Guillaume Braun, creative director at Akufen. "We optimised the navigation four ways, as well as using modular content display types. Our mobile experience is a wink to the Dada movement, which is somewhat arbitrary and disconcerting."

"A cool website documentary, and interesting ideas about sharing in our immediate living environment"

C. CHATPOW (@CHATPOW_)



★
SITE OF
THE MONTH

my Grandmother's Lingo

“This site is so
beautiful and
compelling”FENELLA KERNEBONE
(@FENELLAK)SPEAK WHEN
YOU SEE THIS
SYMBOL.

OK!

Full Screen

★ GSAP, RAPHAEL, UNDERSCORE, JQUERY

SBS.COM.AU/
MYGRANDMOTHERSLINGOSBS www.sbs.com.au

➤ This site tells the story of language worker Angelina Joshua's personal dedication to preserving Marra – a language only spoken by a handful of people in the remote community of Ngukurr in northern Australia. “What I hope is for *[people]* to think about our language ... it's important,” she says. “I hope for them to get interested in learning their own language.”

Speaking is the mechanism used to unlock the story. It's a clever bit of gameplay and a natural extension of the site's larger goal: to teach a language, which is best learned by speaking and repeating words. A consistent symbol animates as you sound the word to show you how on track you are. Each word you learn unlocks a new chapter.

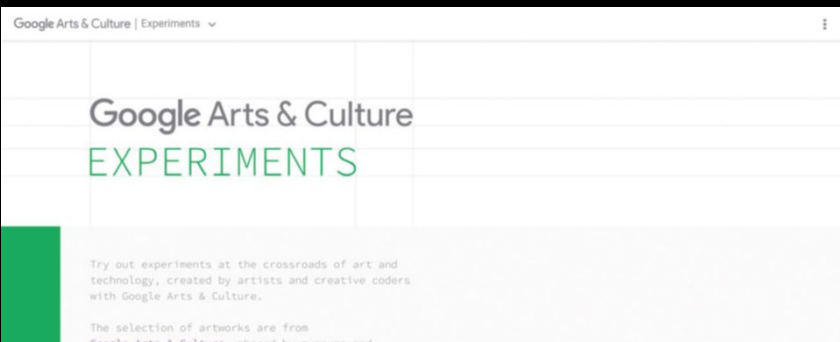
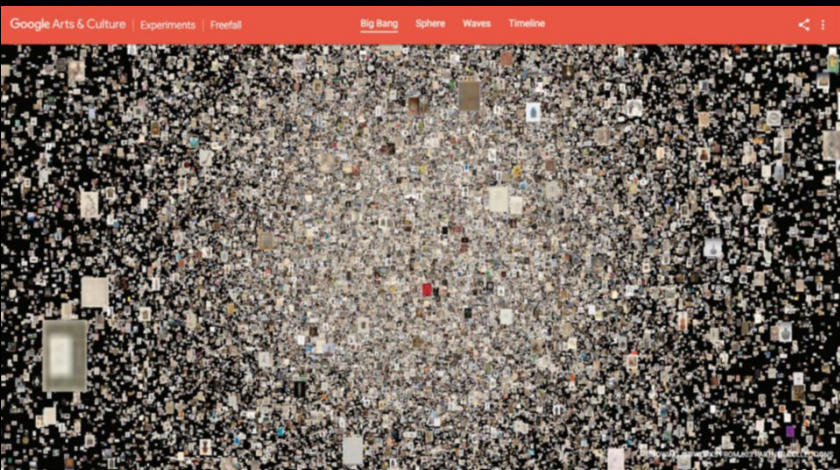
Jake Duczynski, lead graphic designer from SBS, worked closely with local artists from Ngukurr on the project. “We went back and forth a lot, getting approval for symbols and asking local artists for interpretations,” he says.

Sound, just as much as graphics and animations, is integral to delivering captivating online interactive story experiences. In addition to providing the dreamy soundscape, indigenous DJ and musician Kuren (AKA Curtis Kennedy) designed sound cues as part of the interactive experience. When you correctly pronounce a Marra word, a consistent percussive sound rings.

IT'S ESTIMATED A LANGUAGE IS LOST GLOBALLY
EVERY TWO WEEKS.MORE THAN 90% OF AUSTRALIA'S INDIGENOUS LANGUAGES
ARE CRITICALLY ENDANGERED.

MARRA IS ONE OF THOSE LANGUAGES.

START



★ WEBGL, MACHINE LEARNING, MATERIAL DESIGN

ARTSEXPERIMENTS. WITHGOOGLE.COM

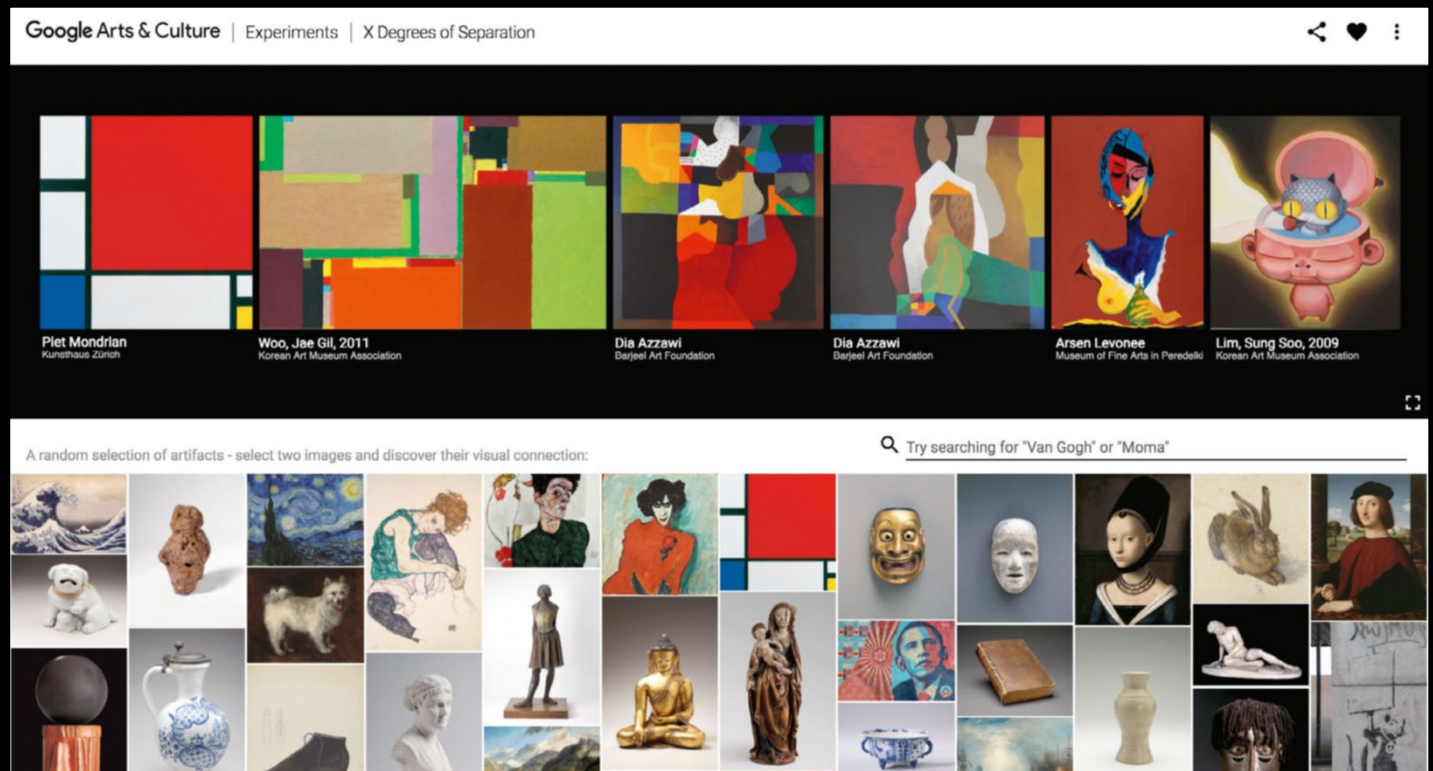
Google Cultural Institute Lab netm.ag/gculture-291

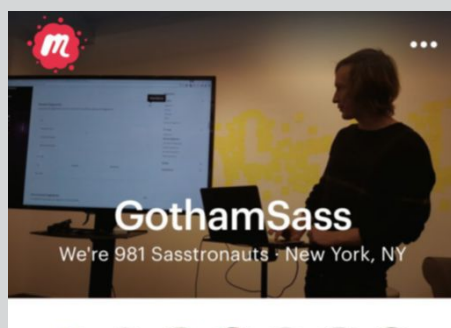


Born from a yearning curiosity about how machine learning can increase access to arts and culture, a small team of creative coders at Google's Cultural Institute Lab in Paris have been teaching machines to see art like humans, and to be creative. The results of their experiments are now available for all to explore.

In the X-Degrees of Separation section, AI attempts to connect artworks using visual similarities. You select two pieces of work and get back a series of up to six works of art that show how the two are visually connected. In Free Fall, meanwhile, interactions in 3D space provide a fun way to browse the data, showcasing its sheer volume. Data tells its own story in T-SNE Map, where artworks are grouped by characteristics.

The art project worlds are all very simple, leveraging Material Design for unified UIs that do their best to get out of the way and encourage exploration. The design of the Google Arts & Cultural Experiments website plays with the idea of stepping into a painting, enabling you to make new connections to the art. On larger screens, cards are precisely framed in the viewport. The site uses subtle animation and videos to cue your gaze to areas you can explore. It really does feel like you are entering another world.





★ WEBPACK, FLICKITY, LOCATION API

MEETUP.COM

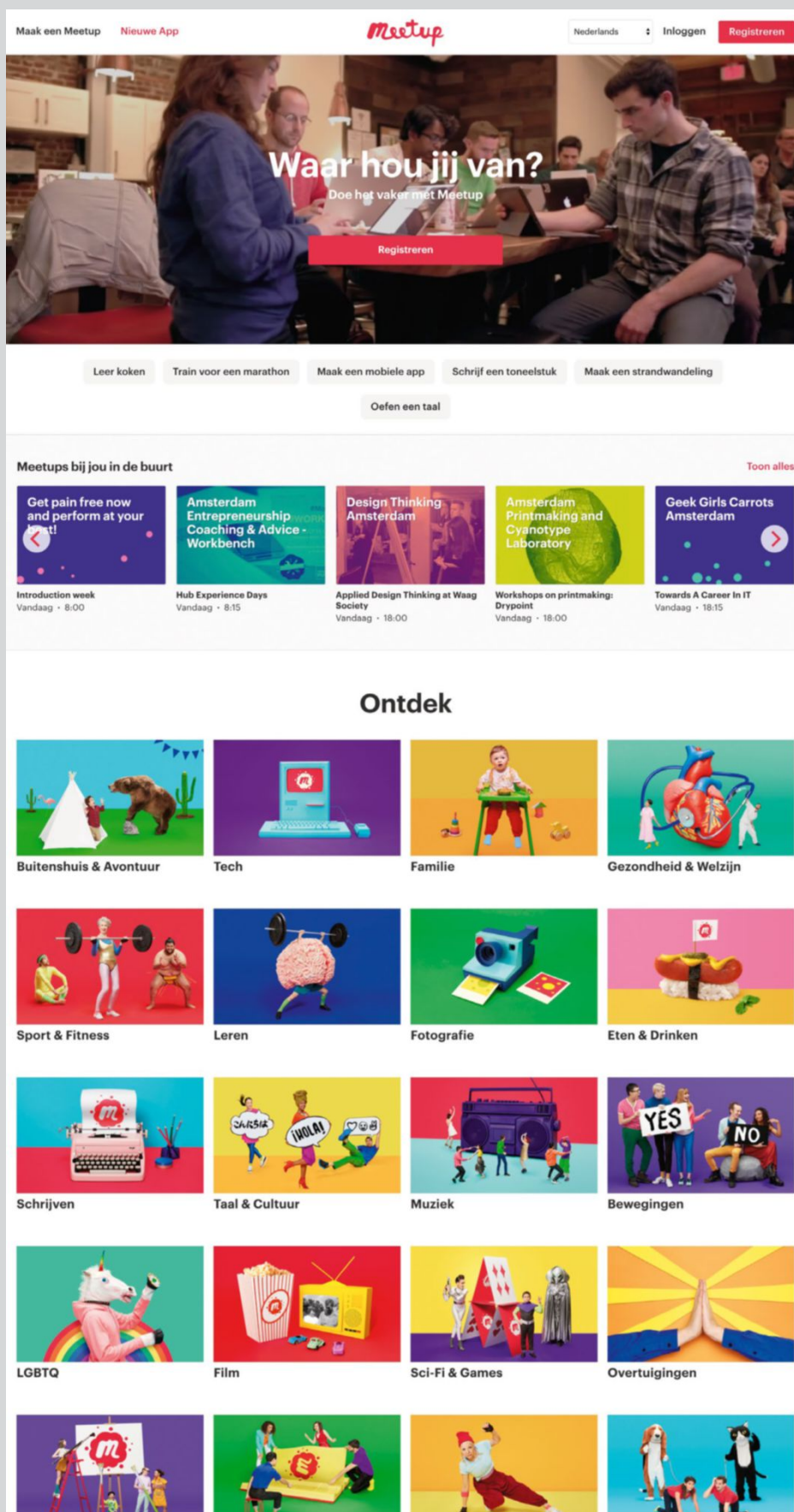
Meetup www.meetup.com

“For the first time, our outsides finally match our insides,” says design director Jen Gergen about Meetup’s recent redesign – the first in its 14-year history. “All the elements of our new branding system capture the spirit and energy of millions of people meeting up,” she adds. “This includes the bright colour palette, the duotone photo treatment, and a set of unique photos created for each of Meetup’s categories (with members as models).”

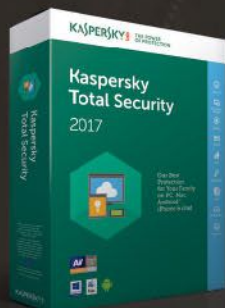
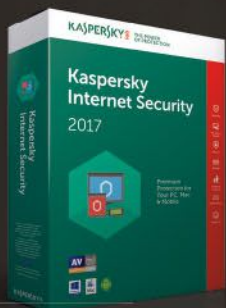
I particularly love the thought that’s gone into the code architecture, which, according to senior UI designer Adam Detrick, comes from a “tight collaboration with the design team”. Detrick designs and maintains SassQuatch, the design system that helps the team manage refactoring the old code base into new.

The functional codebase is made up of lightweight, scalable CSS. The priority was that the utility classes must be understandable at a glance, so Meetup established a readable grammar to help overcome the difficulty of naming. Detrick notes that this greatly reduced the amount of CSS in the codebase, as well as enabling non-developers to code.

This is a great example of finding a solution that works best with the constraints of your team. The Meetup team has shared more of their experiences in a series of Medium posts (medium.com/@meetup) – well worth a read. [n](#)



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SHOWCASE

Sublime design
& creative advice

THIS MONTH FEATURING...



FOCUS ON

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In the modern era, distractions are everywhere.

Sam Kapila explores some tools that aim to help keep you on track



PROFILE

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We catch up with award-winning WordPress specialists **Westwerk** to find out what life is like on the Silicon Prairie



HOW WE BUILT

64

We go behind the scenes to find out how

Fox Créateur created its gamified microsite for software testing app Crowdville

DESIGN CHALLENGE

This month ...

FURNITURE SHOPS

* PROFILES



DAN EDWARDS

Dan is creative director at No Divide studio, and co-creator of resource bank oozled

w: nodivestudio.com **t:** @de



FELIX RENICKS

Felix is the interactive designer for Channel 4 News in London

w: channel4.com/news **t:** @fffffelix



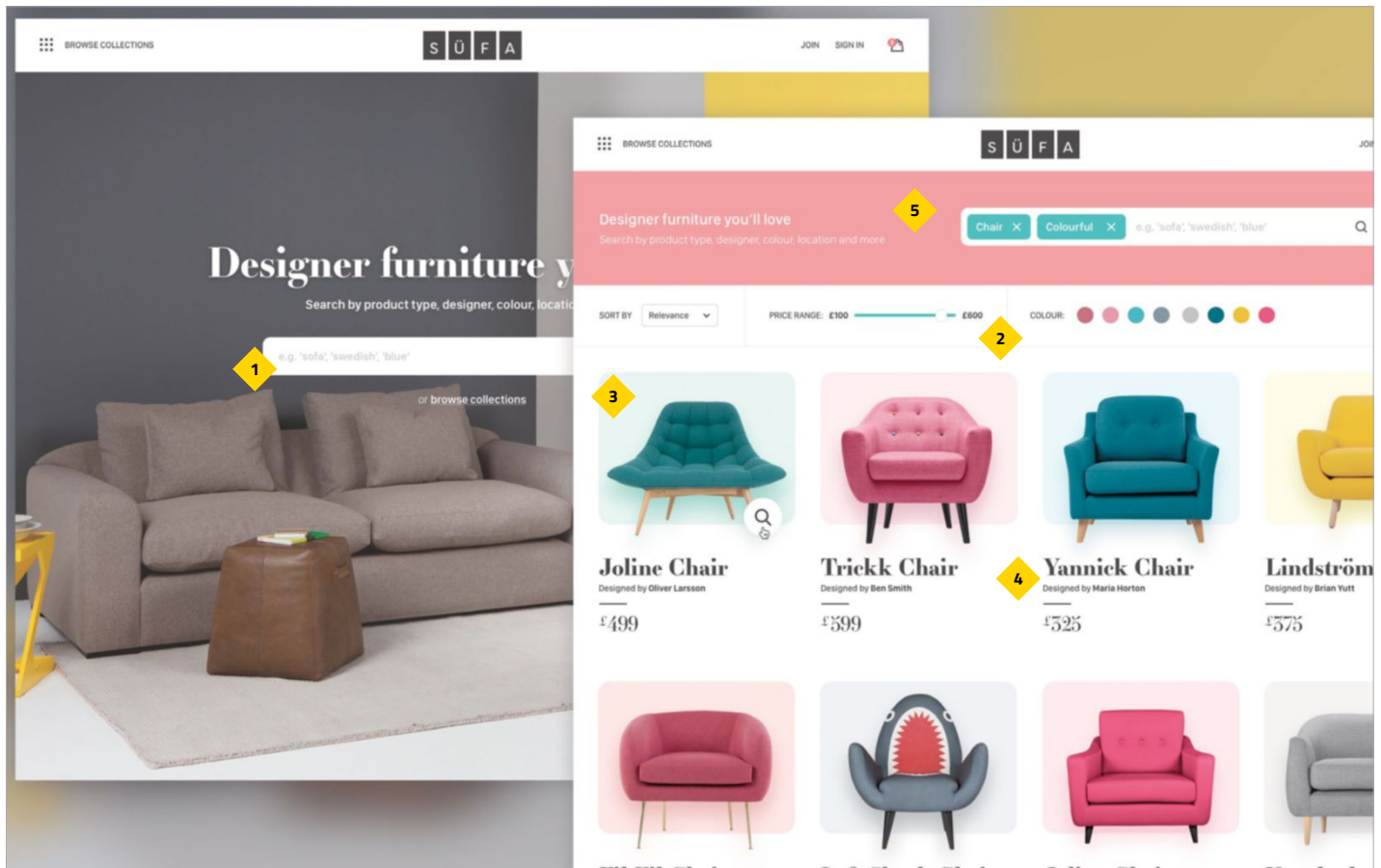
DIOGO DANTAS

Diogo is a freelance designer based in Lisbon, Portugal

w: diogodantas.com **t:** @im_diogodantas

BRIEF

This month we'd like you to design a website for a furniture retailer. It could be a site for a local antique shop, a mail order company for designer pieces, a place for collectors to find something special, or anything in between – it's up to you.



Product images: made.com

* DAN EDWARDS

SÜFA

A fun, energetic site that aims to woo design-conscious customers

> SÜFA is a premium furniture store that specialises in unique items made by designers from all over the world. I wanted to focus on discovery, so the platform is mainly focused on using search to return items, based around terms such as 'sofa', 'Swedish' or 'blue'.

I also wanted the customer to know who designed each product, and have included this information in the search results along with the product information. The idea is that on the product detail page a customer can read more about the designer.

Along with search I wanted there to be a simple 'browse collections', function. This would allow the customer to browse specific items such as sofas, chairs, tables and more, with further refinement being done via search and filtering. I also wanted to make maximum use of bold colours and photography to really bring a fun and energetic feel to the site.

Q CLOSE UP

(1) The main way to discover products is via intelligent search. I'd recommend using a service such as Algolia to enable instant results. A customer could search via multiple terms, as broadly or narrowly as they wish. (2) Once the results are shown, users can filter further, to sort the items alphabetically or by relevance, price or popularity. A slider helps show results within a customer's price range, and searching by colour is ideal if they have a specific theme in mind. (3) Using coloured backdrops that match up to the products helps direct customers' eyes to colours they're interested in, and brings a unique style to the products shown. (4) Including the designer's name on every product brings a human element to the site, which could be enhanced further by enabling users to filter by specific designers. (5) Browsing can also be done via pre-created categories. Including a second route to product discovery can help where customers may be less familiar with searching and filtering.

MY MONTH

What have you been doing this month?
Working on a number of client projects at No Divide and preparing guests for our first podcast.

Which sites have you visited for inspiration?
When I'm stuck, Dribbble is still my go-to.

What have you been watching?
I've been loving *The Last Man on Earth* on Amazon.

What have you been listening to?
A few of my favourite artists have released new albums recently, so mostly Kings of Leon, RHCP and Rolling Stones.



MY MONTH

What have you been doing this month?
Adding performance improvements and polish to the Channel 4 News website, which I rebuilt in WordPress. It's a mammoth effort but it's getting there!

Which sites have you visited for inspiration?
Lifestyle sites, and breweries that use 'real' textures.

What have you been watching?
The Get Down on Netflix and, well, the news!

What have you been listening to?
Chance the Rapper's *Coloring Book*, and whatever rolls into Spotify's Discover Weekly suggestions.

* FELIX RENICKS

HOLMNES

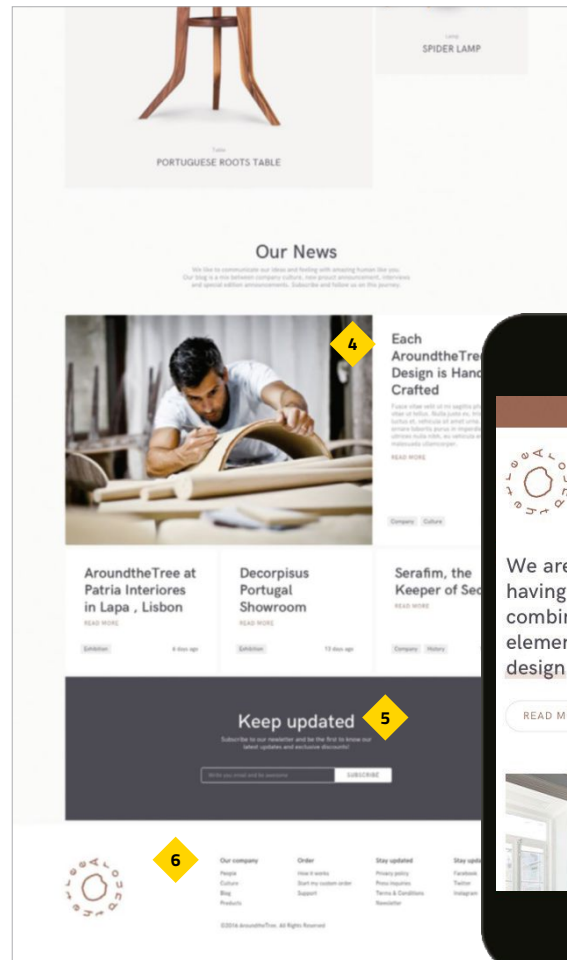
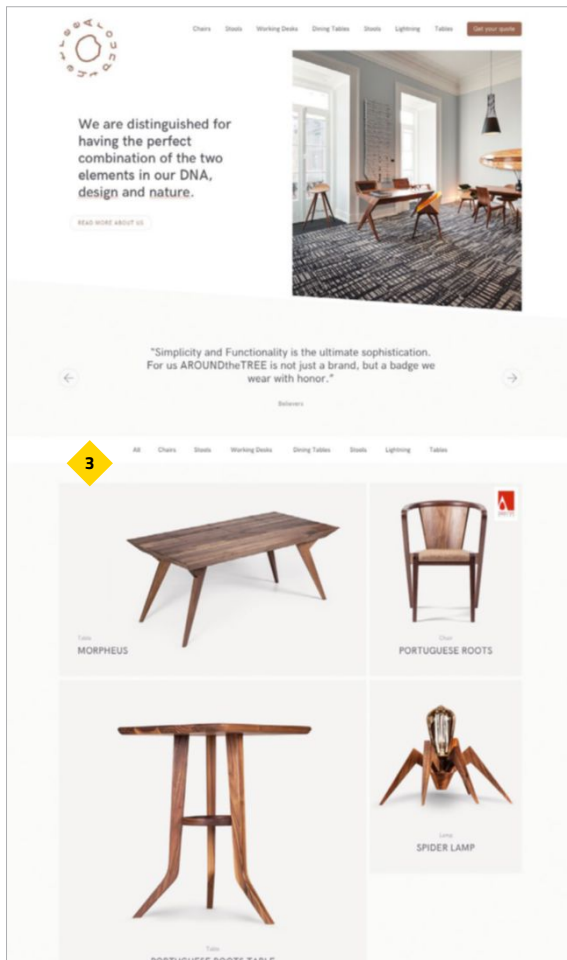
The site for this bespoke furniture company breaks with trends to embrace a skeuomorphic look

> Holmnes is a small company that designs and builds bespoke wooden furniture. For when IKEA just won't cut it, the team will work up a completely custom design and build the piece to a high quality finish. The challenge for Holmnes lies in convincing potential customers that it's worth paying more to commission the perfect piece of furniture, so the site focuses heavily on design sketches and workshop images.

We're always hearing about craft, workmanship and tools in web design circles, but this site takes things a step further – it's actually made of wood. In an age where skeuomorphism is out and flat design is in, the dark wood and gold elements are unusual and memorable. For this site, they are just right because the company specialises in wooden products, and the navigation bar looks expensive and tactile on the page.

Q CLOSE UP

(1) The site structure follows a traditional sales funnel from left to right – from what the company does, to examples of its output, and finally to an enquiries page. (2) The large banner background image has a slight Gaussian blur to help the foreground product imagery stand out. It will be encoded as a progressive JPEG to ensure the image appears quickly. (3) An example of the kind of products Holmnes can create sits front and centre; the most prominent element on the page. This is reinforced with a simple CSS animation on the 'furniture of your dreams' thought bubble (4) Technical drawings and plans emphasise the value proposition and the reason you should choose Holmnes over its competitors: bespoke design and high build quality. (5) These big golden call-to-action buttons provide a natural place to click to progress through to the next page of the site. Following this trail will land you on the Contact page, primed and ready to order some furniture.



* **DIOGO DANTAS**

AROUNDTHE TREE

Great photography takes centre stage on this site to showcase the company's distinctive products

> AroundtheTree is a custom furniture design company based in Portugal. It values local traditions and gives them new interpretations, mixing old craftsmanship with advanced technology to create distinctive, exclusive pieces.

The main idea for this site was to focus on the product and brand values. The homepage is divided into three main sections: the header, product showcase, and company highlights.

Following my usual process, I designed the layout for desktop and mobile simultaneously, making it more consistent and easier to implement. I created a clear grid structure that communicates order, but added some diagonal elements to add interest. The design will be supported by smooth transitions and animations. The colour palette was inspired by AroundtheTree's products, and a sans-serif type helps reinforce brand values.

Q CLOSE UP

(1) The website's photography is supported by a well-defined grid and puts the product front and centre. It's the main focus of the website, so it occupies almost 100 per cent of the screen. (2) On mobile devices, the navigation will be accessible through a hamburger icon, with a smooth transition when showing links. (3) The filter section will allow users to filter products by category, in order to make their discovery journey more straightforward. (4) When the user scrolls into this section, each block is animated with a left-to-right transition. (5) To make sure that users don't miss out on important announcements or new products, they can easily sign up to the newsletter via this call to action. (6) The footer contains links for any additional information the visitor might wish to access.

MY MONTH

What have you been doing this month? Launching some projects I've been working on.

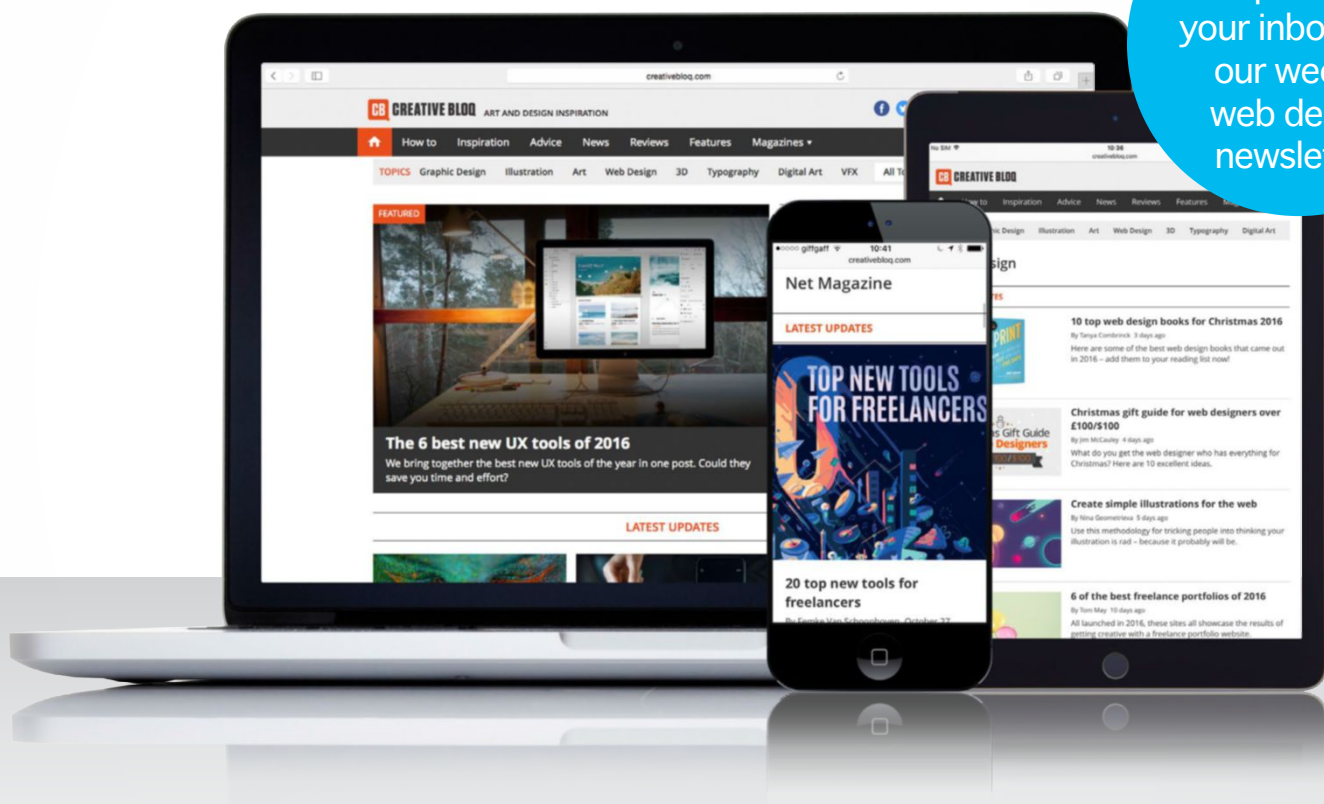
Which sites have you visited for inspiration? I look for inspiration when walking around and from sites like UpLabs, Dribbble and Behance.

What have you been watching? The documentary *Inside the Superhuman World of the Iceman*, along with some daily vloggers I follow on YouTube.

What have you been listening to? Mura Massa and a lot of podcasts including *Inside Intercom*.

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* FOCUS ON

TOOLS FOR FOCUS

Sam Kapila explores some online tricks to keep you on track

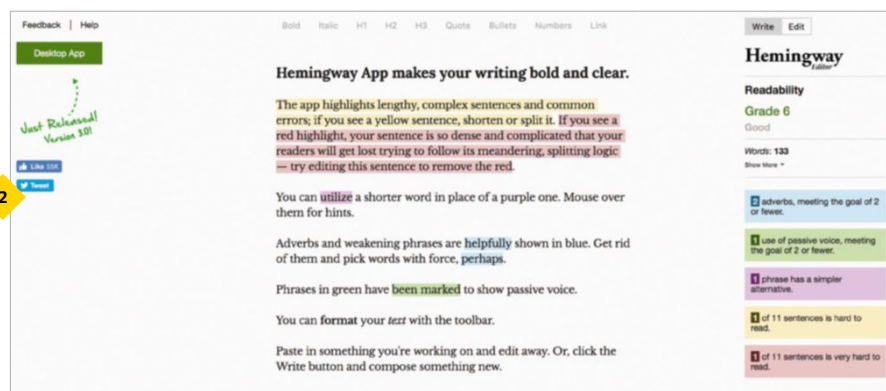
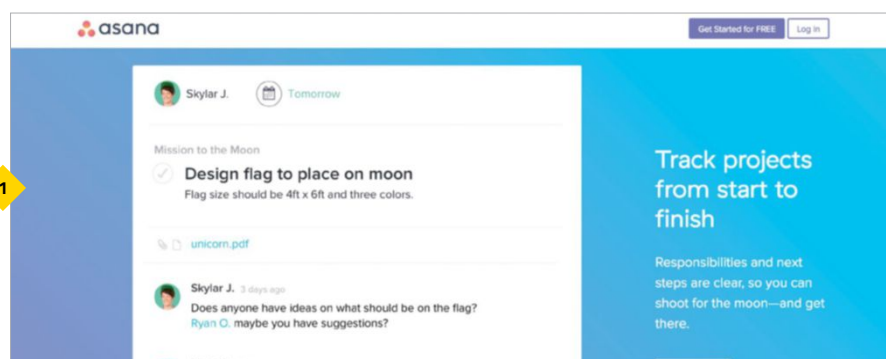
> I have a lot of trouble focusing. It's evident in my plethora of browser tabs and ignored to-do lists. I'm always travelling or in an office full of coworkers and students – but it's not because of distractions that I struggle; it's the inability to complete a task, even when I am able to drown everything out.

I've found a few ways to get me in the zone. While calm music can help, it can also be distracting and can lead to me focusing more on that. A friend recently suggested a binaural waves app, which uses sound waves transmitted through earphones to help the brain concentrate, get sleepy, focus, wake up, or unwind. I've found it a huge benefit – it helped me write this.

One reason we find it so hard to concentrate is because we're distracted by the different steps we need to take to reach an end goal. Asana excels in combatting this. I use it to put my to-do list items in phases, track progress with my team members, and see reports of progress in a visual way. I block off five to 10 minutes at the start of the day, a few times a week, to update it.

Once I get going with my writing, Hemingway is a desktop and browser app with a distraction-free design, and writing tips to get rid of passive voice. A toggle lets you write without edits and then switch to see suggestions and flags.

Whatever tool you choose, it's crucial to get into a routine with your focus time – and stick to it. These apps can then be helpful in the quest for productivity. **n**



Sam (samkapila.com) is a designer living in Texas and an instructor at The Iron Yard, an international, immersive coding school

(1) Asana (asanaapp.com) works for many groups and projects, and comes with a huge list of

customisations. The tags and reports are worth exploring.

(2) Hemingway App (www.hemingwayapp.com) is a wonderful

writing app that's totally free of distractions.

(3) To help you

concentrate, unwind or sleep, give this brainwave generator (netm.ag/mynoise-291) a try.



★ PROFILE

WESTWERK

www.westwerk.com

As it celebrates its 10th anniversary, this digital agency shares what life is like on the Silicon Prairie

> Autumn 2016 marked Westwerk's 10th anniversary. It was a chance to look back on a decade in which the Minneapolis-based digital agency carved out a fruitful niche as an award-winning specialist in WordPress website development. We were keen to learn more about Westwerk's story – and what the next 10 years have in store – so we asked founder Dan West, director of operations and culture Emily Berens, and account executive Marissa Noble to dish the details ...

net: How and why was Westwerk set up?

DW: After working as a creative in various capacities for many years, I decided to quit my job and figure out a better way to run a business; one that was transparent with its employees, as well being a rewarding place to work. I wanted to create a place that people wanted to go every day.

It sounds cheesy, but having a solid commitment to customer service was also something notably lacking in many creative agencies, and I felt that a client-focused approach to work would ultimately lead to a successful agency.

net: What made you decide to specialise in WordPress?

DW: We'd spent years building websites from scratch using a number of different platforms, either due to a client request or to the skillset of our staff at the time of the project. That approach proved to be very inefficient and costly in the end, both for us and for our clients. ►





INFO

Location: Minneapolis, MN

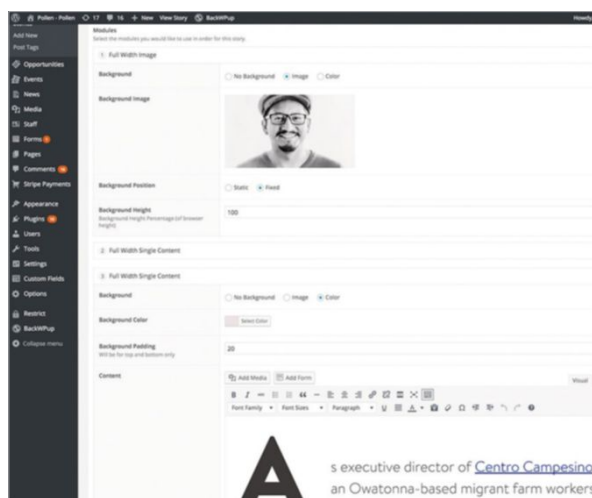
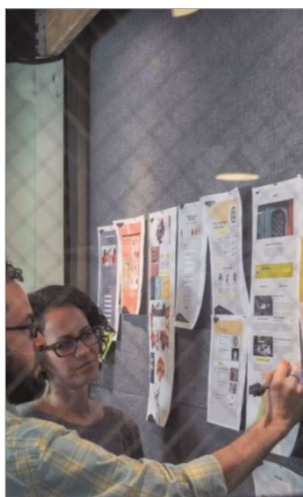
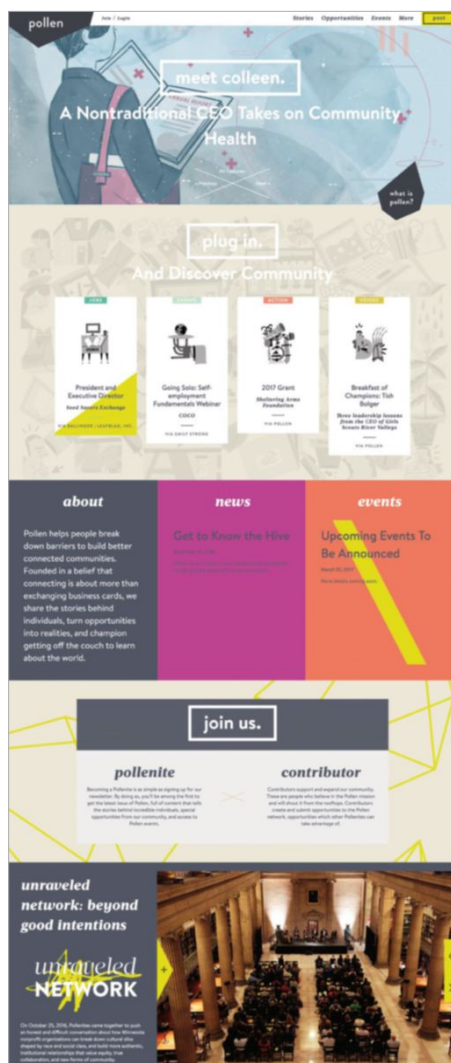
Established: 2005

Team size: 16

Areas of expertise: Branding, design, WordPress development, accessibility

Clients: McCrea's Candies, Travel Beyond, Pollen, Boise State University, Solium

Awards: Webby Awards, Creativity International Awards, PRINT Regional, AIGA, GDUISA



Pollinating ideas Pollen, which promotes connections between communities, approached Westwerk for a rebrand. The resulting 'publishing powerhouse' won a Media & Interactive Design Award

and then create solutions that will support them. It helps that we have a knack for identifying things in clients and organisations that they often don't see themselves, and then bringing those things to life through branding, design, strategy and development.

Also, we don't just accommodate what our clients think they need. Instead, we trust that they came to us for a reason and we strive to visualise and design in the best way to reach their goals.

net: You won a Media & Interactive Design Award for your work with Pollen. Could you walk us through the project?

MN: Pollen is a nonprofit that creates a space for communities to be better connected. Its established user-base ranges from local artists to C-suite executives, each looking for the ability to interact with one another and share their voices online. When we first sat down with Pollen, we conducted a thorough deep-dive of the organisation's goals, mission and opportunities for growth.

We then evaluated its digital presence to identify areas for improvement, and soon realised that Pollen's existing website wasn't pulling its weight. The Pollen team wanted a publishing powerhouse that could showcase gorgeous editorial content while still being accessible on mobile and tablet devices.

After a rebrand, intensive discovery stage and digital strategy, we were able to produce an award-winning WordPress site. Pollen can now put the spotlight on its beautiful, inspired editorial content of photography, GIFs, animations, text and illustrations.

The content is also easily consumable on mobile devices, with options to swap content presentation on smaller screens. From full-width and columns to image overlays and backgrounds, the longform content builder has it all. The nonprofit's content-editing capabilities now rival those of publications with million-dollar web budgets.

net: You win a lot of design competitions. What's your secret?

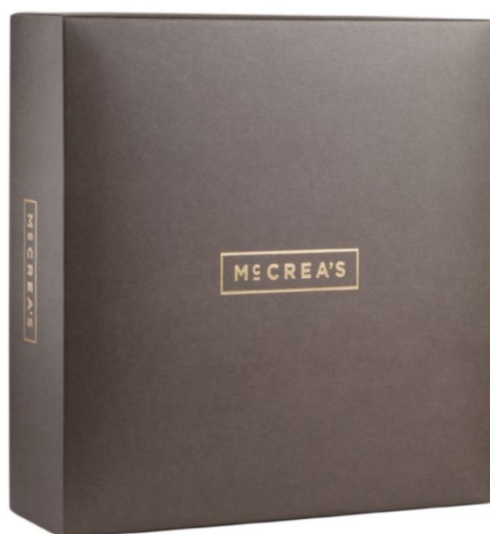
DW: There really is no secret. We feel we have a really solid process that gives us the foundation upon which to get creative on projects. We ask a lot of questions to our clients and really listen to what they say in order to make sure we are aligned with their goals for success. Once we've earned the client's trust, we then have the ability to let our team run free.

From there, it's a combination of keeping our eye on the big picture, applying our talents and experience, and paying close attention to the details. It also helps to have a lot of people looking at things while we're working on them

► We used WordPress in 2009 on a project and found it made things easier for us, from a development standpoint, and for our clients, for ongoing management and maintenance. It was a few projects (and team members) later that we made the decision to stick to one platform and it has made that part of our business incredibly focused. Having that focus makes it easier for clients to approach us because they already know what technology they want to use, and are now looking for experts to help them build a successful project.

net: You say, 'We don't have clients; we have partners'. What's the difference?

DW: It's simple: we invest in our clients' long-term success. We work with them to identify their business goals and objectives,



Sugar daddies Westwerk helped transform Massachusetts-based caramel producer McCrea's Candies from a 'mom-and-pop' shop to a premium fixture on the shelves of the nation's grocery stores

– so we post a lot of work on the walls and let everyone weigh in.

net: Westwerk helped transform a small neighbourhood business, McCrea's Candies, into a national brand. How did you pull that off?

MN: McCrea's Candies is a small, family-owned company that specialises in all-natural, handcrafted caramels. The owners knew some big changes needed to happen in order to push their business to the next level, and that this would all begin with a more defined focus and stronger brand.

We kicked this project off by flying out to Boston to meet with the McCrea's team, and naturally, sampling a few of their caramels (purely for research purposes, of course!). We took the information we captured in these face-to-face workshops, along with what we learned in our market and competitor research, and distilled it into a comprehensive and cohesive strategy for the brand.

Leveraging McCrea's commitment to all-natural, real ingredients as our inspiration, we created a new look that reflected the simple, upscale quality of the product. Updating the design also meant we had to update the packaging system. To cut down on costs and encourage consistency, we created one multipurpose box that can be modified to accommodate four different products.

Working closely with the company's founders, we were able to help take McCrea's Candies from a 'mom-and-pop' shop whose packaging looked the part, to an upscale confectionery firm that's sitting at the top of its class – and on grocery store shelves.

net: You have a very cool workspace. How did you create it?

MN: We moved into our current office, a raw warehouse basement in Northeast Minneapolis, in 2012. With the help of close friends and family, we spent the next 145 days crafting the space entirely by hand: everything from the desks and sliding doors, mezzanine and bar were all handcrafted. We wanted to build a place that would physically represent the amount of honest hard work and passion we put into every project.

The result is a vintage-inspired office that combines all the modern amenities of a digital agency with the old-world charm of a turn-of-the-century warehouse. It's a great environment to come to work every day, and makes for a great place to enjoy a cocktail or friendly game of foosball.

net: What tech or tools are you excited about at the moment?

DW: As of January, our design team has transitioned over to using Sketch for



* OFFICE CULTURE



EMILY BERENS

Director of operations
and culture

What's on your desktop?

Maneki-neko [a popular Japanese cat figurine], The Daily Mood book, an oversized mug of green tea, project management books, Vitamin B12.

What do you have on the walls?

My buddy Fritz, project board, calendars, decorative lights.

What will you do for lunch?

We like to take it off campus to our go to neighbourhood pubs and delis.

What hours do you work?

We kick off our days between 8.30-9am and close up shop between 5.30-6pm, with the occasional evening 'to-dos' sprinkled in here and there.

What else do you do in the office?

Play foosball, mini-basketball and shuffleboard, explore Spotify playlists, bake cookies, mix a drink, talk shop.

How often do you hang out?

We often end the week with a Friday Happy Hour, daring each other to try the various spirits on our bar shelves. We are looking forward to another season of AdLeague Bowling on Monday nights and Tuesday Trivia at a local pub.

Describe your office culture in three words

Collaborative, compassionate
and charismatic.



★TIMELINE

A look at the key dates in Westwerk's history

OCT 2005

Dan West leaves agency life to start Westwerk



MAY 2007

The agency works on projects for Target, Gander Mountain and NikeBauer



JUN 2008

Launches Rush River Brewing Company rebranding



AUG 2009

Westwerk develops a website for its first client on WordPress



SEPT 2010

Shift implemented to exclusively developing on WordPress



JUL 2012

Launches first enterprise-level website for Boise State University



AUG 2012

Since launch, the agency has grown 500 per cent in terms of employees, revenue and numbers of clients



MAY 2013

Westwerk and friends build out new 4,300ft² office by hand



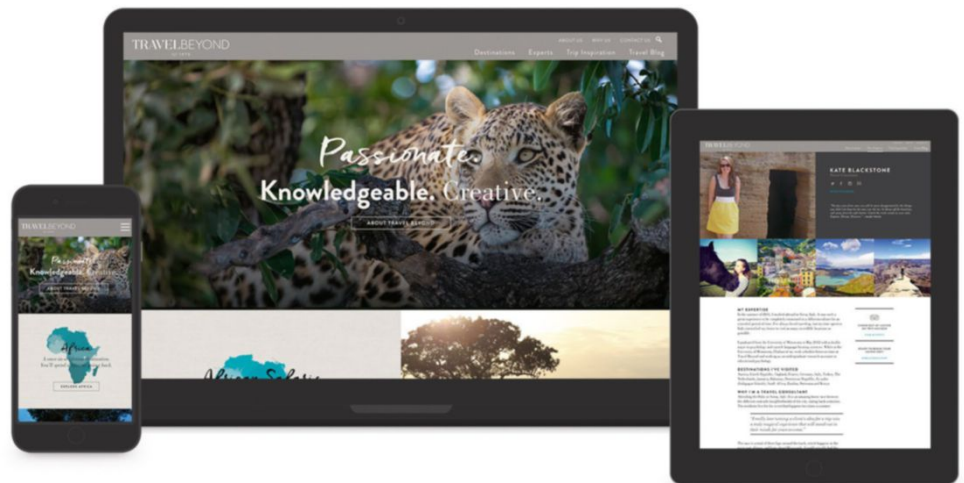
OCT 2014

Community storytelling rockstars Pollen launch their Westwerk-designed 'content rocketship'



JUN 2016

Westwerk becomes gender-inequal, employing more women than men



New frontiers Luxury travel consultancy Travel Beyond is based in Westwerk's home state of Minnesota. The agency delivered a complete brand overhaul, including an updated logo and fresh responsive website

- wireframing, prototyping and designing our interactive projects. It's provided a lot of efficiencies for both the creative and production side of things, as well as making the handover between design and development much smoother.

I'm also pretty excited about VR. We haven't had a chance to use it yet, but we're creating more and more content for our clients and I'd love to be able to experiment on a project with it.

net: What are the biggest challenges you face in your day-to-day work?

DW: One challenge we face on a regular basis is around client understanding and education. It's fairly common to have to explain aspects of a technical project to a client. What I think happens is that everyone uses technology in their daily lives and gets used to seeing certain things. Then they're in the mindset that these familiar things are 'cheap and easy' to produce, just because they see them daily. And with an iPhone and Pinterest account, everyone can become a photographer and designer.

So we often find ourselves talking clients through the realities of design and custom development and the costs associated with them. I feel that the further we get into the digital age, the more likely it is people may think they can do it themselves or that it's all easy and cheap to produce, which will ultimately lead to devaluing what we do as an industry.

net: What's the tech scene like in Minneapolis right now?

DW: Pretty large and constantly growing. There's a healthy startup community in place with lots of incubator-type spaces for young companies to get funding and grow. In addition, there are a lot of innovation meetups and events to connect ideas, money and technology.

There's also a large health technology industry here, because we have several large medical companies as well as [nonprofit medical practice] the Mayo Clinic, which has really been accelerating tech growth in the southern part of the state.

On top of that, there are hundreds of creative agencies and tech companies that have cultivated a lot of talent in the area. The tech scene here has often been called the Silicon Prairie. Cute.

net: What does the future have in store for Westwerk?

EB: We'll probably add a few more members to the team, but we plan to stay relatively small and nimble. We have plans for doing a little more construction to the office by carving out department spaces and more casual meeting spaces (because everyone likes more meetings, right?). Outside of that, it's just about keeping focused on delivering high-calibre creative and development work for our client list. **■**



Next month: Hillary Clinton campaign designer Mina Markham

| THE WORLD'S LEADING DESIGN MAG |



Master VR: top tips to embrace 2017's hottest trend
Plus: get more from print with advice from top freelance designers

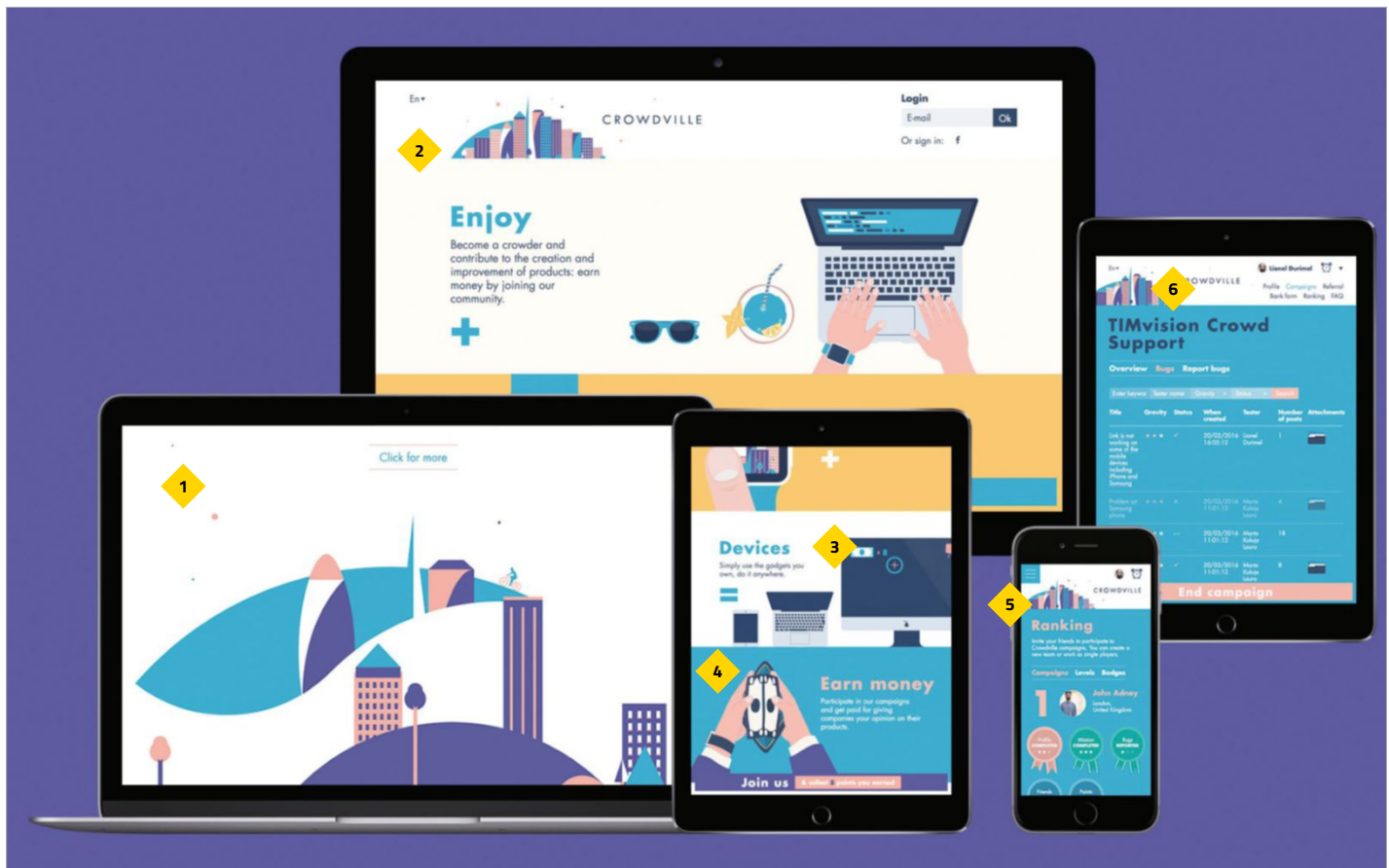
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* HOW WE BUILT

CROWDVILLE

How **Fox Créateur** unearthed the playful side of software testing with this colourful, gamified web app



BRIEF

Crowdville is an Italian startup that crowdsources people to test new software and uncover bugs. The issue? It needed to redesign its web app. Fox Créateur delivered a playful landing page to increase new signups and a gorgeous product site to enable users to test software effectively.

CLOSE UP

(1) The landing page opens on a giant logo, which fills up the whole page with smooth animations of a city expanding, but soon shrinks into the header. (2) Users scroll through animated slides, which show-off the benefits and joy of using the product. (3) Two slides sport an HTML5 game in which users kill creepy crawlies. This increases user sign-ups by guaranteeing system points for each bug killed.

(4) An illustration of a wallet accompanies the game, sending a new banknote flying inside every time the user kills a bug. (5) The product site contains more gamification rewards for completing a profile and any campaigns. (6) The interface is minimal but still has a wide variety of bright backgrounds and a number of neat UI elements, such as expandable menus and responsive tables.

JUSTE KRISIUNE



Juste is the co-founder of Fox Créateur and creative designer. She came up with the concept for Crowdvillle
w: www.foxcreateur.com

DARIUS KRISIUNAS



Darius is the co-founder and creative lead at Fox Créateur, responsible for UX, branding, code and quality control
t: @kurejas

MANTAS TUMOSA



Mantas (aka Mosa) is a Fox Créateur collaborator. He created the logo and a set of illustrations for Crowdvillle
w: www.hellomosa.com

> Crowdvillle (crowdvillle.net) is a crowdsourcing platform made in Italy with the purpose of enabling companies to test out their digital products with final users, and allowing those same users to earn money for identifying bugs. London-based digital agency Fox Créateur (foxcreateur.com) designed and built a great landing page full of interactions aimed at acquiring new users, together with a stylish web platform with user profiles and campaigns, stats, data uploading tools and ranking systems.

net: What did Crowdvillle want from the redesign?

JK: Crowdvillle came across our previous web project made for OT-24 and approached us with the task of creating similarly engaging visuals and interactions. The client then took the redesign as an opportunity to expand Crowdvillle into the UK market and pursue new business opportunities. Another relevant aspect of the new design is to allow users to feel like they are actually contributing and helping businesses by improving their products.

net: How did you get involved?

DK: We started our relationship with Crowdvillle by designing their new brand and shifting from low-fidelity MVP logo, typography and visuals to a fresh, colourful and playful identity. For their web project, we were asked to create an overall site concept, then detailed UX, illustrations, UI design, frontend code,

animations and WordPress integration. We also worked together with their in-house developers to make sure our frontend code worked well with their custom-made backend system.

net: How did your logo work feed into design and development?

DK: I'm really keen on the trend of flexible identities popularised by MTV and Google. Recently they have been used more by branding agencies such as Wolff Olins, and Moving Brands does a great job of creating animated branding systems for the online world. We thought it would be great to enrich the logo by creating day and night versions, and mix it up with various buildings. The composition is pretty flexible so the logo can be easily tailored to specific cities: London, Paris or New York City for example.

net: What did you learn during your UX research and design process?

DK: We started from a workshop with the client, analysing their needs, competitors and similar web projects. As they already had a working MVP, we went through all the details of an existing UX flow. After writing down all possible improvements, we created a brand new user journey and a set of wireframes with 22 screens in total. **JK:** Existing brand guidelines gave us a path to designing UI patterns and creating a set of illustrations. We started the visual design process by creating quick mockups and prototypes for



*TIMELINE

Key dates in the Crowdvillle project

JAN 2016

After completing Crowdvillle's brand guidelines and logo, Fox Créateur aims to create a web app and landing page



JAN 2016

The team analyses similar web products, looking at an existing Crowdvillle MVP and providing detailed user journeys



JAN-FEB 2016

UI design begins, including content research, the creation of illustrations and prototypes with animation tests and parallax effects



FEB 2016

The team continue creating screens, keeping things simple and user-friendly



FEB-MAR 2016

Frontend development begins, ensuring an optimal viewing and user experience across a wide range of devices



MAR 2016

Animations and HTML5 game come to life, and are tested and debugged. The CMS is integrated for the presentational part of the website



APR 2016

The product site is integrated into the main Crowdvillle platform and tested



EARLY MAY 2016

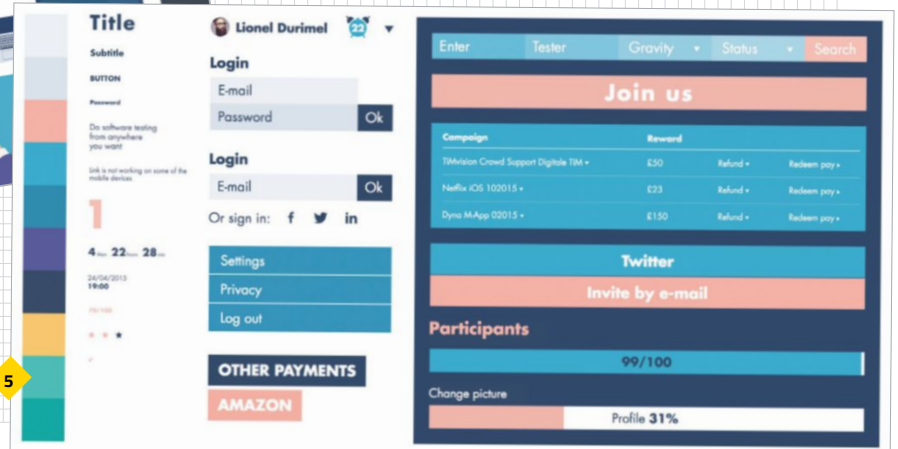
Website goes live



*EVOLUTION

Juste Krisiune talks through the sketches and wireframes that led to the final concept

(1) We started from lo-fi sketches on paper before hashing out digital wireframes. In these, we defined main interaction points and the user journey. (2) Before creating actual vector illustrations, ideas were quickly sketched out visually on a Wacom. (3) This style moodboard was created following some intense research into current illustration trends. We wanted to show visual references for the client and our freelance illustrator. (4) We went through a dramatic UI design transformation on the landing page, playing with different colour combinations, testing animations and trying out various objects for illustrations. This helped us define a mood and style for the whole site. (5) As a part of design process, we created a set of repeatable UI patterns, including many variations of expandable data tables, menus and buttons.



► user testing and client approval. We then spent time perfecting the details. Somewhere in the middle of this, we generated the idea of gamification and animated illustrations designed by our frequent collaborator, the talented illustrator Mosa.

net: What technologies does the site use?

DK: The frontend part was built using HTML5, CSS3 and old-school jQuery; the presentational part runs on WordPress with PHP and MySQL. I made use of some frameworks I had previously created myself for controlling CSS animations with specific JavaScript functions, and a percentage-based grid system for exporting images for the animated illustrations. The same grid is used in CSS to make a responsive layout, so the animated parts easily adapt to all screen sizes.

Images were optimised with tools like TinyPng making sure it loads fast. Some of the animated elements are pure geometrical circles and squares so no images are required to render them. Add some parallax effects and CSS 3D transforms and you get a engaging interactive experience!

net: There's obviously a lot of backend stuff going on. Tell us a bit about that ...

DK: The main backend platform was made from scratch by the wonderful



Cross purposes The team spent time at the Google Device Lab to make sure animations and layouts worked properly on all iOS and Android devices



Bespoke experience As a result of UX research, the team delivered a brand new user journey containing 18 pages and four screens for an additional microsite

development team at Crowdvill.

Some of the other platforms were used to allow the main functions to work smoothly – for example, specific ranking and upload systems. The payment framework is run by business rules management system Drools from Red Hat. The system was coded with AngularJS and Java 8, and uses Spring for the rest of the services. The database is MySQL, and the interface for it was developed using Hibernate.

net: Tell us about the HTML5 game you created to drive sign-ups.

DK: Yes, that's my favourite part! It seems to be a fantastic time for HTML5 games, I can see many great examples created by the devs around the world. For example, the game market on the Facebook Messenger app seems to be increasingly popular with users.

Crowdville asked us to make a landing page that would engage users and encourage them to sign-up, so we came up with the idea of inviting users to try and replicate the purpose of the site – that is, to actually find and destroy bugs. Most importantly, doing this increases the number of points the user receives after signing up. At the beginning the idea sounded ridiculous, but once we had made a quick prototype, everybody really enjoyed it!

net: How did you ensure the animated landing page performed well across various devices?

DK: It's a matter of spending the right amount of time on cross-device testing. Animations that work well on a powerful MacBook Pro might suck on Android or iOS devices. Usually we simplify the most performance-hungry animations, decrease a number of simultaneously bouncing objects and remove unnecessary elements. The hard part is not to lose the charm of animation by oversimplifying things, and making sure the site still runs great on mobile devices.

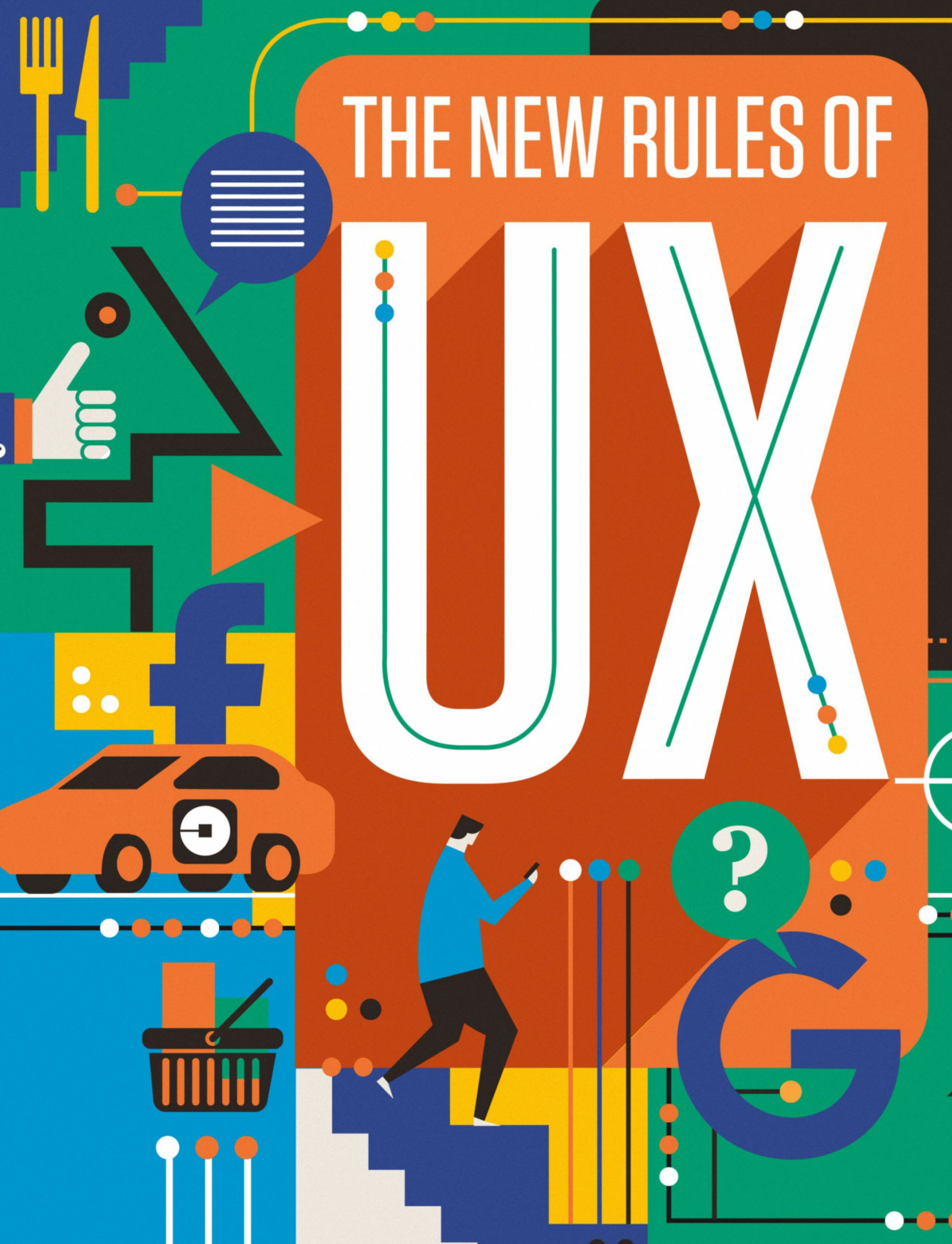
net: What's the response been like?

JK: Along with the launch of their new site, Crowdvillie simultaneously made an investment in marketing. As a result, they experienced a dramatic growth of new user sign-ups in 2016. People proved to be very interested in finding bugs and participating in the campaigns, so we can say with confidence that this product is becoming a popular and effective system for both gaining money and for contributing to a new application's success by making it bug-free. 

Next month: Behind the scenes on Clearleft's site update

THE NEW RULES OF

UX





The rules of user experience are always evolving. **Kenny Chen** looks at six themes in UX that have taken off and will shape the future of design

When I started my UX career, the iPhone didn't exist. I was wireframing screens for car navigation systems using PowerPoint. Users interacted with the touchscreen interface with their fingers or voice. Tap was the only gesture; there was no swipe, pinch or slide. There were quite a few voice commands but they were difficult to recall, and you had to say them a specific way. Even then, the system didn't understand it most of the time.

Today, swipe is the new click. Technology has made it possible for us to talk to computers as if they were human. We're designing experiences for multiple platforms using design-specific tools. Companies with a design culture are prospering. Designing a unified experience is a requirement for products to succeed.

The rules have changed. The next generation of UX designers will face new challenges that will impact our everyday lives. Here's a look at some of the themes that are changing the face of UX.

CONVERSATIONAL UX

Hey Siri, find a table for six in Los Angeles tonight. OK Google, take a selfie. Alexa, ask Uber to request a ride. Tech giants Apple, Google, Amazon and

 **AUTHOR**

KENNY CHEN

Kenny (@kennychen) is the director of UX design at Bankrate. He curates UX Design Weekly, a hand-picked list of the best user experience design links kennychen.net

 **ILLUSTRATOR**

NEIL STEVENS

Neil is an illustrator and graphic artist based in the UK. He has worked for clients including *Wired*, the *Guardian*, Thames & Hudson and Sainsbury's www.crayonfire.co.uk

- Facebook have embraced conversational interfaces. Virtual assistants and chatbots have exploded onto the scene. We're seeing a growing number of applications with invisible interfaces; applications with no commands to remember or user interfaces to learn. Users can just type or talk as they would to their friends or family.

Conversational UX will be one of the biggest shifts in how people interact with devices. Natural language recognition is progressing at a rapid pace. Frictionless computing can be a reality.

Get a ride, pay a bill or shop online, all through chat. This is already happening in Asia with WeChat and Line. It's only natural we should expect to see it in Facebook M, iMessages, WhatsApp and Slack. There are already more people using messenger apps than social networks. The convenience of doing all your tasks in one central place that we already spend all our time in will be too great.

Screenless interfaces

So what does this mean for user experience designers? We won't be designing visual interfaces as often. Instead, we will design experiences through conversations – experiences that help users achieve their goals. The future of interaction is screenless.

Some early design patterns have already emerged:

- Start with a quick introduction and explanation of what you do



One stop WeChat is a hub for your activities throughout the day. Users can chat, pay bills, shop online, and much more



Screen-free experience The Amazon Echo and Google Home are AI-powered virtual assistants that have no physical interface – users interact with them entirely through vocal instructions

- Make it clear the person on the other side is a bot and not a human
- Avoid open-ended questions; encourage a specific answer
- Acknowledge valid answers before moving on to the next question
- Focus on micro-copy that is natural and represents the brand

Conversational UX opens a new host of problems in terms of what you say and how you say it. We use facial expressions and body language to understand what people mean. In any chat, there are typos, acronyms and slang. Then there is the issue of trust. Will we let robots manage our finances, plan our trips, or buy our clothes?

Conversational UI is still in its infancy. As designers, we have the opportunity to shape the experiences we want. Through the power of conversation, computers and humans will finally be able to speak the same language.

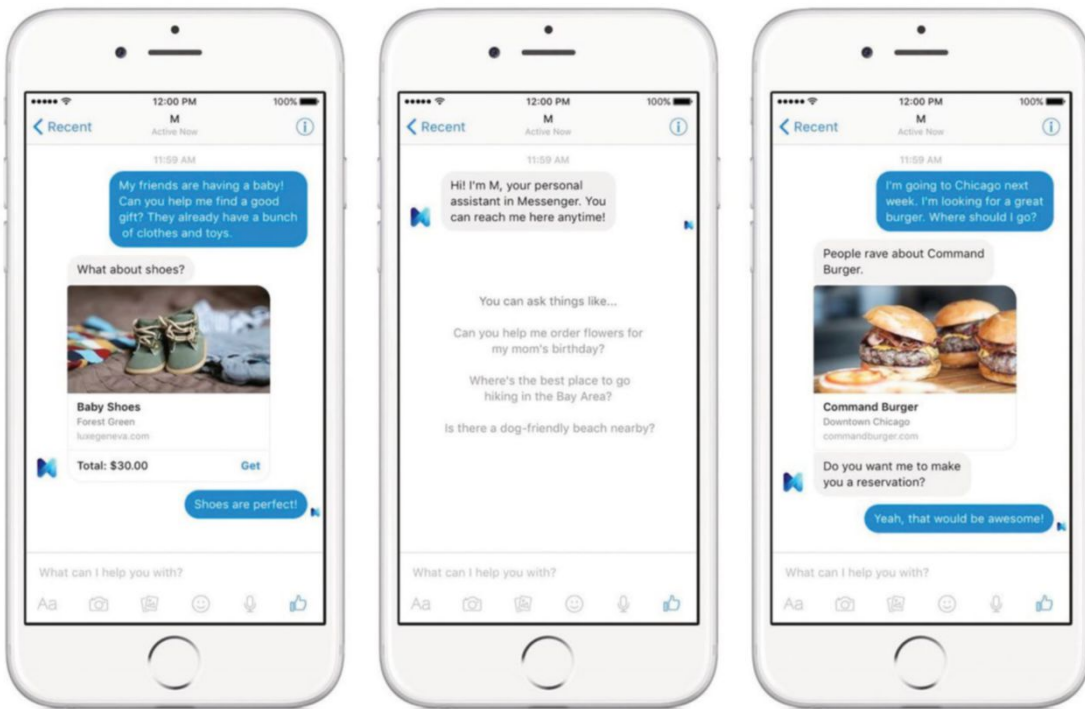
FOCUSED DESIGN TOOLS

It was only a few years ago that designers had to hack existing tools when designing

for the web. They'd retrofit tools like Photoshop and Illustrator to create wireframes, flows and mockups. Organisations now realise the importance of a great user experience and are willing to invest in it. In 2016, it seemed like there was a new design tool or set of updated features being released every other week, and they were all vying to be a part of the designer's workflow.

Currently leading the way is Sketch, a tool focused on interface design. With a robust set of powerful features and plugins, it has become the go-to for most designers. Competitors have taken notice.

Adobe got into the game with Experience Design. It differentiates itself from Sketch by adding a prototyping component and Windows compatibility. Another tool that has been gaining popularity recently and could offer a glimpse towards the future of design tools is Figma. It runs in a web browser and allows for real-time collaboration. CAD-inspired design tool Subform adds another new dimension – it focuses on the unique constraints of responsive layouts.



Part machine Facebook M is a hybrid personal assistant – it's powered by artificial intelligence, augmented with human helpers to do tasks that other software can't

The prototyping game continues to evolve. Google announced Gallery, a tool for interactive motion. InVision launched a plugin for Sketch and Photoshop called Craft. Craft helps users design with real data, sync styles, and prototype within Sketch. Facebook developed its own prototyping tool called Origami Studio. And Framer continues to push updates, making it easier to design with code.

Collaboration made easy

Collaboration and organisation also have a place in the design process. Designers can find clients and work through Design

Inc [see boxout]. They can share their designs with their team using Wake. Google is working on a similar concept called Stage. For documenting design decisions and managing change, Abstract looks promising. Zeplin helps designers and developers by generating style guides and assets. Lingo stores all your visual assets in one place.

Tools will continue to mature and new players will emerge. Their best features will make it into competing tools. When the dust settles, only a few will survive. The next Sketch will be the tool that's easiest to use and exponentially improves a team's design workflow.

A MOBILE FUTURE

In 2009, Luke Wroblewski wrote that websites should design for mobile first (netm.ag/mf-291). Mobile users were growing at an alarming rate. Mobile internet adoption was on the rise. Time spent in mobile apps kept going up. It was clear mobile was here to stay.

Fast-forward to today and the numbers don't lie. There are more smartphones in the world than PCs. The time spent



Next level We're finally seeing software and services geared towards working designers' needs



Q&A Marc Hemeon

The founder of Design Inc. considers how design tools have evolved

What problem were you trying to solve when you launched Design Inc.?

MH: We help folks find and obtain high-quality design and creative services on-demand from the best talent in the world. Design Inc. is made up of designers of all types. Each creative on the site has been vetted and approved manually after a careful review of their portfolio and experience. Our focus this year is to help more than 10,000 creatives do what they love.

Where did the idea come from?

MH: By accident. Initially Design Inc. started as an agency, but in a matter of weeks we became overwhelmed with hundreds of requests and projects. There had to be a better way to help all these folks seeking out design help. So we decided to build a hand-curated marketplace where companies and individuals can post their projects for free, and receive proposals from excellent designers and creatives.

Where do you see design tools going in the future?

MH: Figma has been the first browser-based design tool I've ever used regularly. I imagine XD, Sketch and other design tools will also move into the browser. Design tools are becoming simpler and easier to use, which empowers more folks to be designers, not just those who had the perseverance to push through learning Illustrator or Photoshop.

Atomic Design

Atomic Design is a methodology by Brad Frost for designing and maintaining interface design systems. Frost saw parallels in physics, where all matter in the universe can be broken down into a finite set of elements. It consists of five stages:

1 Atoms are the basic building blocks:

These are simple HTML elements like form labels, inputs and buttons. Atoms have their own unique properties, but aren't very useful by themselves.

2 Molecules are made up of two or more atoms with their own properties:

They form a simple, portable, reusable component. A search form molecule contains a label, input and button atom.

3 Organisms comprise of groups of molecules, atoms and other organisms functioning together:

For example, a header organism might contain a search form and navigation molecule.

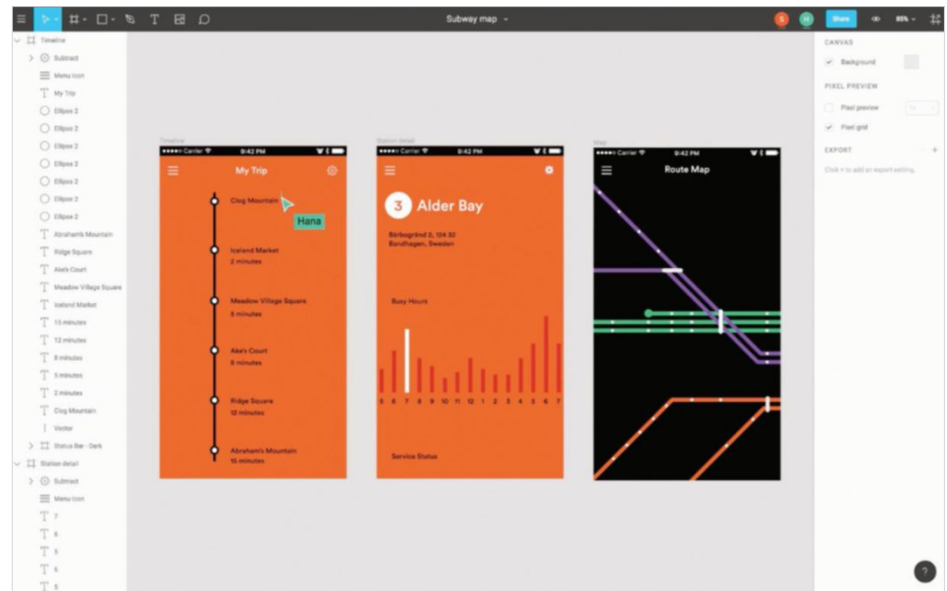
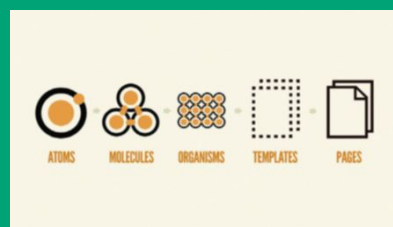
4 Templates combine organisms into a layout:

They articulate a design's content structure. You could think of them like wireframes.

5 Pages are the high-fidelity final designs:

They display specific instances of templates with real, representative content. Pages are essential for testing the effectiveness of the system.

Atomic Design enables you to see interfaces broken down to their atomic elements, and how these combine to form the final designs. Using this mental model, we can create more effective design systems.



Joint efforts Browser-based collaborative interface design tool Figma aims to be to design what Google Docs is to text editing

- in mobile apps dominates the web browser. A growing population of people no longer use a PC at all. Smartphones have changed the way we communicate with each other and access information. Yet the mobile experience is still riddled with bad UX.

Integrated experiences

If we are to design for tomorrow's mobile experiences, we can't be guided by today's constraints. Phones will get smarter, and more integrated and powerful.

Apps are beginning to scratch the surface of contextual experiences. Enter a restaurant and get a suggestion of what to order, based on your preferences. Got a meeting across town? Your phone will tell you when to leave, based on traffic. In the future, the camera will act as another context-aware source – it will be an extra

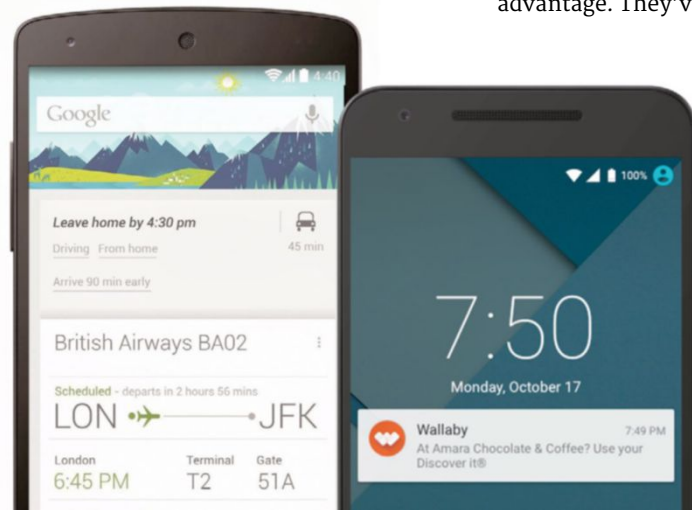
eye that can understand what it's seeing in real time.

We're starting to see more integration of data and services. Instead of opening a specific app to complete a task, we'll be able to do it via voice or inside another app. Apps that don't integrate with each other will seem like a broken user experience.

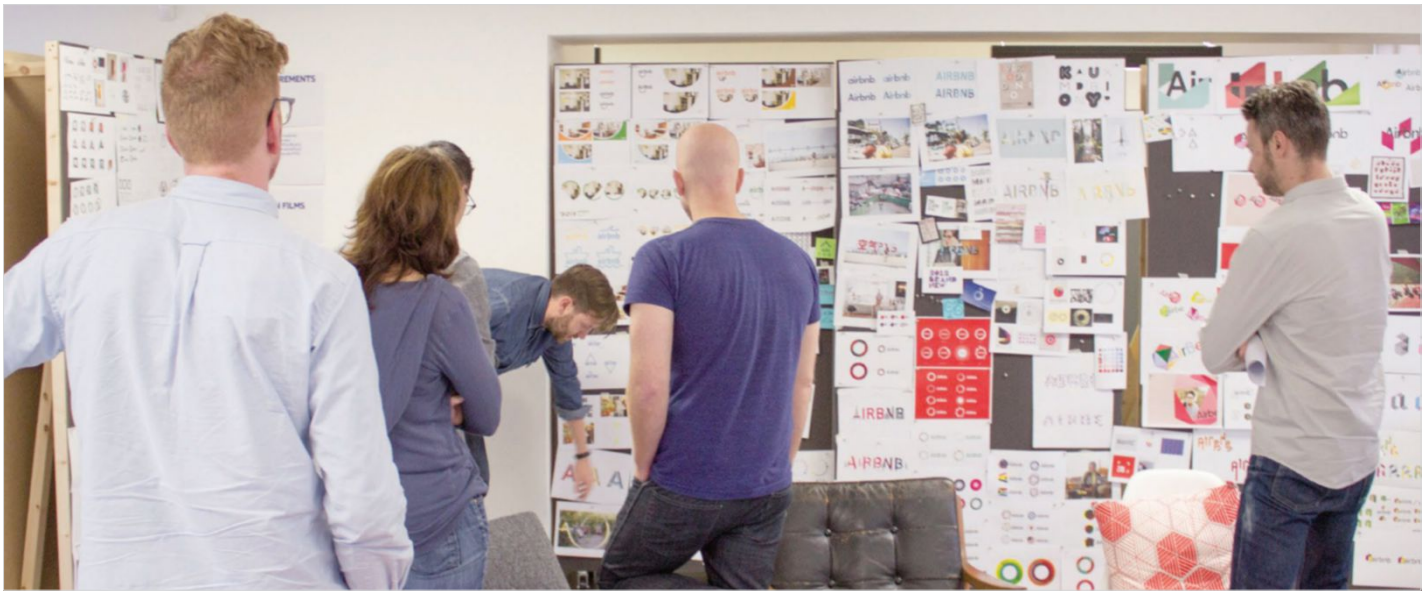
We'll interact with the other devices in our home, car and at work. To provide the best experience, all devices will talk with one another. The phone will be the one device that's always with us; the hub of the frictionless experience. The apps that will become a part of our everyday life will be the ones that can best anticipate our needs.

DESIGN CULTURE

Apple, Facebook and Airbnb have shown how design can be a competitive advantage. They've built their companies



Memory jog Google reminds you when to leave. Wallaby tells you how to maximise rewards when walking into a store



Culture change Airbnb's team set out to redesign their brand, website and apps. They filled their walls with inspiration, ideas and mockups to get a clear view of what was and wasn't working

around a culture where design is everyone's job and anyone can have a good idea. It's now more important than ever to design the right culture in which to build the best products. Design principles, creative spaces and transparency are fundamental to a great design culture.

Design principles help teams focus on a consistent vision. They align teams towards their values. These aren't principles that the head of design comes up with – the whole team should have an input of what they value. The

feature plenty of whiteboards, and the walls would be plastered with work-in-progress and Post-it notes. By having design out in the open, anyone can see what the design team is working on. This opens up the process and gets people talking and sharing ideas.

There are some other ways to establish a strong design culture:

- Bring stakeholders into the design process early. This helps get them more invested, meaning fewer surprises at the end

culture is one in which everyone knows the skills required to get to the next level. Not everyone should have to be a manager to succeed – have career paths for individual contributors that want to perfect their craft.

For an organisation to grow and become more efficient, design needs to be on everyone's mind. Organisations are recognising the need to design a design culture. The ones that do so most adeptly will create the best products that meet users' needs.

A healthy design culture is one in which everyone knows the skills required to get to the next level

organisations with the best design cultures share principles with all their employees. Everyone knows what makes the product experience unique.

Creative spaces

The environment in which you work can have a profound effect on design culture. Designers need space (and time) to be creative. An ideal shared space would

- Have regular design critiques to get different feedback and improve designs
- Put together highlight clips of usability tests and send them to the decision-makers. Seeing others not understanding their product can have a powerful effect

Designers want to grow and know what it takes to succeed. A healthy design

LIVING DESIGN SYSTEMS

Designing for a multitude of platforms is becoming more complex. How do you deliver a consistent, unified design experience across different platforms? Designers and engineers are solving this challenge by building sustainable living design systems [see boxout].

A design system is a collection of UI components, patterns and guidelines that reflect the design principles to provide a consistent look and feel. Design systems encompass the different types of style guides; everything from the brand identity and tone of voice to writing and pattern libraries. Google's Material Design system (material.io/guidelines) is one of the more well-known design systems. ►

Resources

To learn more about the themes discussed here, check out these resources.

Design for Humanity

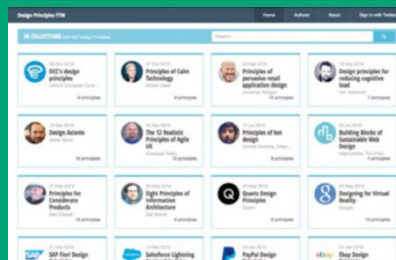
designforhumanity.danieleckler.com

An interactive essay exploring the past, present and future of humanised design. Topics include conversational UI, virtual reality and the principles of intuitive design.

Design Principles FTW

designprinciplesftw.com

A collection of design principles from companies around the world – ideal for inspiration or ideas about your own principles.



Website Style Guide Resources

styleguides.io

A collection of resources for style guides and pattern libraries. Includes articles, tools, examples, talks and more.

Org Design for Design Orgs

orgdesignfordesignorgs.com

A book for creating and leading design teams within your organisation.

Prototyping Tools

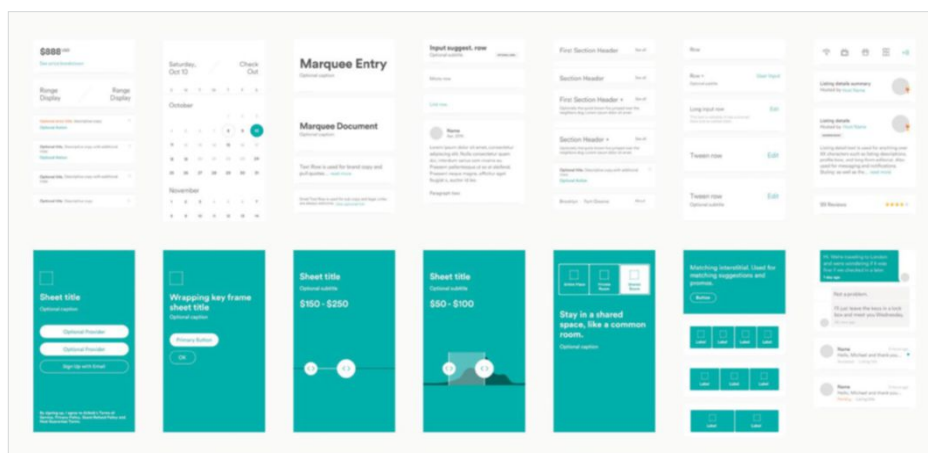
cooper.com/prototyping-tools

A list of the most popular prototyping tools, with reviews and rankings. Users can sort and filter to find the best prototyping tool for their needs.

The UX of VR

uxofvr.com

A list of resources about the user experience considerations for virtual reality. Includes videos, articles, slides and more.



System built The Airbnb Design Language System is a collection of components defined by shared principles and patterns

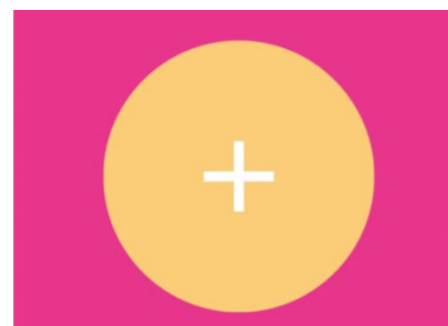
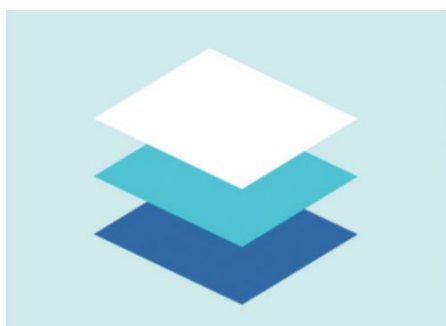
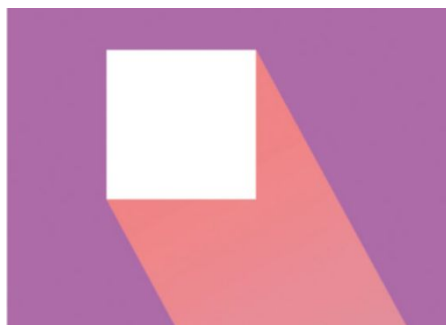
► Building a library

Creating and maintaining an effective design system requires a huge investment. The Airbnb team created its system by first identifying the inconsistencies in its products. Designers printed out their designs and laid out the screens side-by-side. They audited the flows in order so they could see where the experiences were breaking. Principles helped inform their decisions to standardise on components and design patterns.

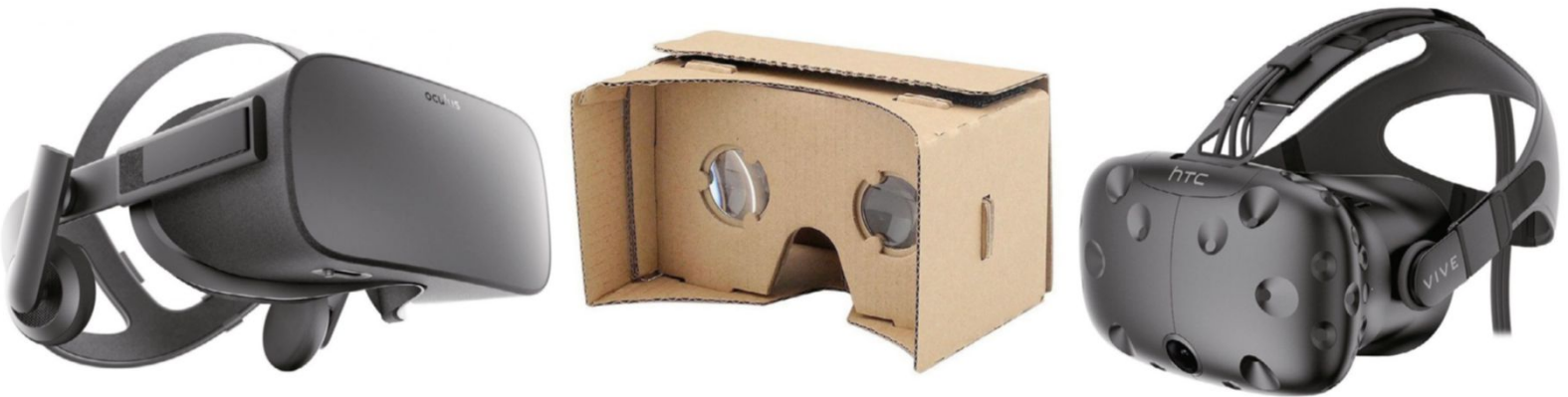
A pattern library acts as a centralised hub for all components of the user interface. Effective pattern libraries provide pattern descriptions, annotations and contextual information. They also showcase the code and pattern variations, and have the ability to add real data into the pattern structure.

Once a design system is up and running, it's only the first step in the journey. It needs to be living. Nathan Curtis (@nathanacurtis), a co-founder of UX firm EightShapes, says: "A design system isn't a project. It's a product, serving products." Like any good product, a design system needs maintenance and improvements to succeed. Both Google and Salesforce have teams dedicated to improving their design systems. The goal is a workflow where changes to the design system update the documentation and the code.

The benefits realised by a thoughtful, unified design system outweigh the



Creating consistency Material Design, one of the more well-known design systems, is Google's visual language. It combines the classic principles of good design with the innovation of technology



On the market The Oculus Rift, Google Cardboard and HTC Vive are some of the virtual reality headsets bringing VR to the mainstream

effort involved in establishing one. There is a consistency across the entire user experience. Engineers and designers share a common language and systems are more sustainable. Designers can spend their time solving harder problems and the actual user experience.

THE UX OF VIRTUAL REALITY

User experiences are not limited to a desktop or mobile screen – many everyday objects now connect to the internet. One of the more exciting design challenges is virtual reality, which has been around for some time but has recently become more accessible, thanks to headsets like the Oculus Rift.

Designing an immersive experience is not the same as designing for a flat

screen. Design principles for two-dimensional screens don't always translate to three-dimensional environments. A new medium means new rules, interactions and patterns.

In motion

Understanding the physiological effects of virtual reality design is critical to its success. Google has only two main rules when designing for virtual reality: avoid motion sickness and establish familiarity with the interactions.

Motion sickness occurs when the motion you sense is different from the one you visualise. Designers can reduce the chances of this by continually tracking the user's head position. Users should be in control of their

movements and at a constant velocity when moving.

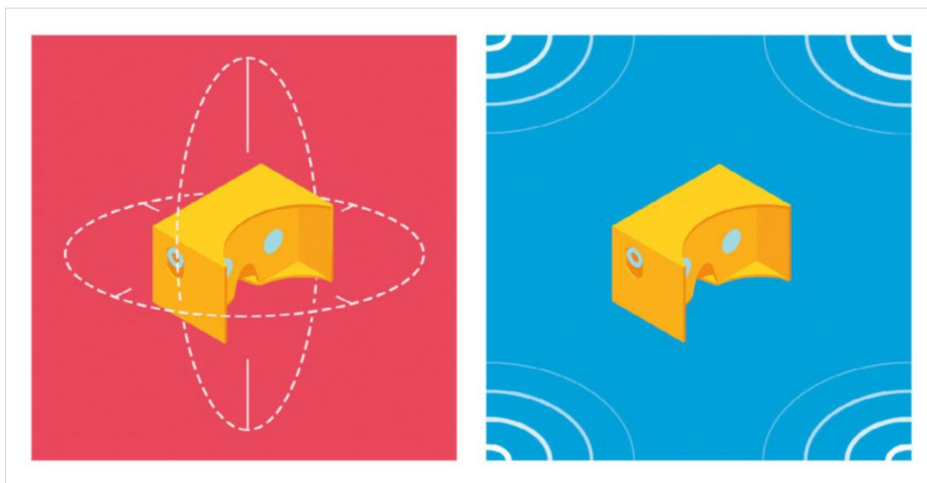
Since VR interactions are not yet familiar, designers will need to guide their users. Spaces no longer have any boundaries. Placing UI controls in the user's line of sight helps avoid confusion. Text may not always be easy to read, so make use of audio and haptic feedback when touching objects.

For virtual reality, designers will need a new set of skills that span different disciplines – motion design, architecture and lighting to name a few. We may not be designing for the screen but the focus remains the same: designing for users' needs. The possibilities for design in this three-dimensional space are endless. UX designers can help create immersive experiences and usher in a whole new world.

MOVING ON

Design has come a long way. Mobile is the face of digital. Organisations are creating large-scale design systems and a culture of design. Tools for designers are becoming more accessible. We have had a small taste of the power of conversational UX and virtual reality.

When I was designing car navigation systems, the goal was to get drivers to their destination. Now, we're seeing cars that can drive themselves and are safer than humans. As technology is always changing, so will the rules of UX. Now more than ever, it's an amazing time to be a user experience designer. [n](#)



Two-step program Google's best practices when designing for virtual reality includes just two main rules: Designers should avoid simulator sickness and establish user familiarity with interactions

REFRAMING FREELANCE

Dave Stewart explores ways you can support your freelance developers to get more out of them, and ensure the best results for your projects

Last issue, I looked at some best practices to help developers tackle bigger jobs to the satisfaction of the creative agencies who employ them. In this second part, I'm going to put the shoe on the other foot and look at how agencies can better partner with freelance developers to get the very best out of the relationship.

Over the past five years, web development has become ever more complex, and the level of domain knowledge required has increased dramatically. Yet freelancers are still expected to skill-up in their own time and complete projects to the same high level.

Having worked on a variety of larger commercial sites over the past few years, I've seen first-hand the difference in the skills and preferences of freelance developers. Part one of this series ('Developing Developers') detailed common problems that can arise with even senior developers – from not knowing the basics or reinventing the wheel, to choosing the wrong technology or writing spaghetti code.

On larger or longer projects, problems like these can:

- Make what should be simple changes exponentially more complex
- Store nasty surprises for later, making future task estimation impossible
- Make it difficult or impossible to add new features or fix any bugs in the existing ones
- Force good developers to pile bad code on top of bad code
- Build insurmountable technical debt, which will eventually result in the need for a code refactor

Further reading: 'How terrible code gets written by perfectly sane people' (netm.ag/sane-291)

DEVELOPER TYPES

To illustrate the range of experience and skills found in the freelance space, let's have a look at a few developer types.

The ideal developer

In an ideal world, every developer hired would come on board with both broad and deep knowledge of the relevant technologies, excellent communication skills and realistic expectations around estimates and scheduling. They would collaborate on decisions, push back when



AUTHOR

DAVE STEWART

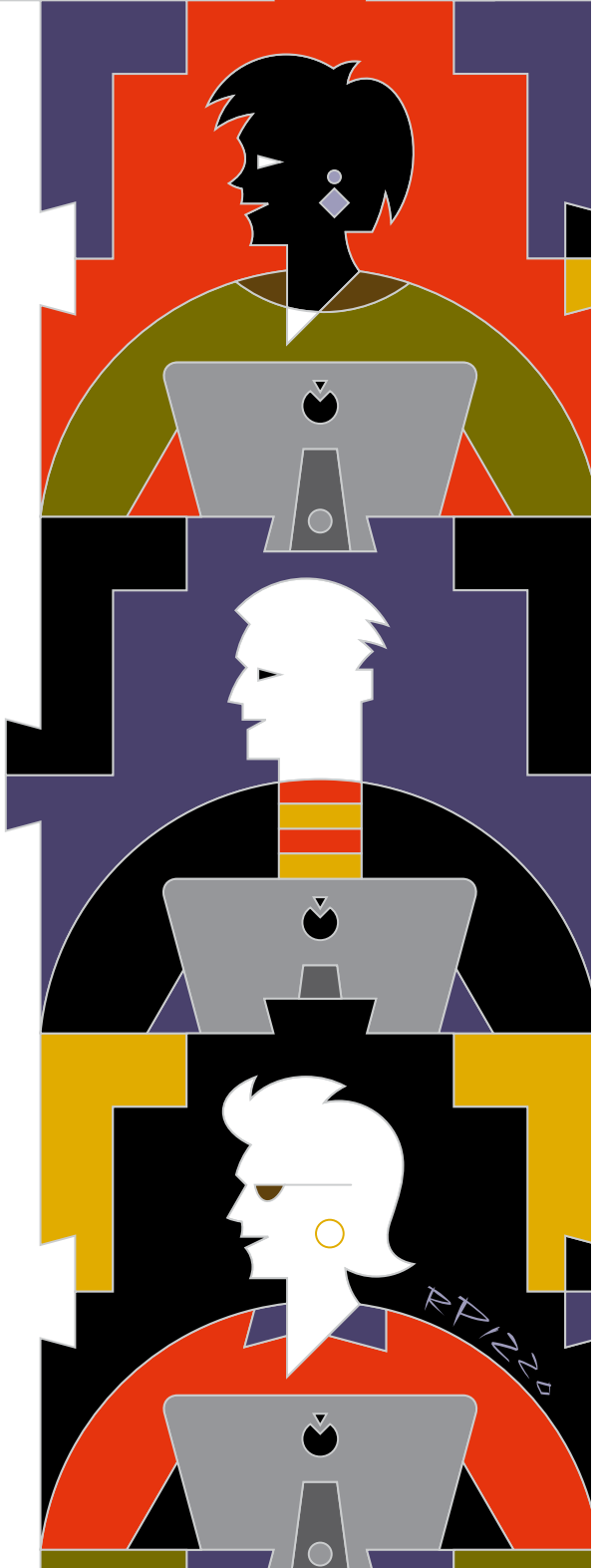
Dave (@dave_stewart) is a freelance frontend web developer, who splits his time between commercial clients, creative agencies and various side projects davestewart.co.uk



ILLUSTRATOR

ROBERT PIZZO

Robert is a well established American illustrator, infographic designer and children's book author. Almost everything you'd need to know about him can be found at www.robertpizzo.com



- necessary, and produce elegant and well-structured code that allows the project to be easily maintained and extended by current or future developers.

The expert beginner

Expert beginners have had enough real-world success that they're certainly good enough to venture out on their own. However, they've not yet made enough mistakes to realise there's more they *don't* know than they *do* know. You'll hear them say things like 'we only write vanilla JavaScript' or 'we don't use plugins' – attitudes that may sound like the hallmark of confidence, but can lead to serious technical debt on larger projects.

Through optimism or inexperience, their well-intentioned ideas can end up riddling your codebase with anti-patterns and horrible home-rolled versions of libraries, or best practices they might know only a little about. This makes it difficult for subsequent and more experienced programmers to build successfully on top of existing code.

Further reading: 'How developers stop learning: Rise of the expert beginner' (netm.ag/expert-291)

The full-stack developer

The full-stack developer is great if you want to get up and running quickly or have limited budget. There are certainly advantages to having one person across frontend, backend and potentially



Forward freelancer You should expect your developers to have a good level of self-awareness

Credit: Freelance Switch

DevOps. However, there are also downsides. One person may be able to do the work of two or three, but they need nearly the combined knowledge and time. This means they won't be able to respond as quickly, or if they favour one discipline over another, specific domain knowledge won't be as deep as a specialist's.

If this suits your project then go for it, but be aware that an unfavourable trade-off could contribute to technical debt; either through a lack of in-depth domain knowledge or, frustratingly for specialists, bad practices.

Further reading: 'The myth of the full-stack developer' (netm.ag/fullstack-291)

The toxic developer

The toxic developer's main camouflage is the sheer complexity of their code. At first glance it looks impressive; pages and pages of dense, uncommented, jargon-filled code makes it seem like they're solving extremely complicated problems. So by logical extension you deduce they must be a super-smart person that you're lucky to have on board.

However, nothing could be further from the truth. Once you slash and burn your way through, it's always a case of massively over-engineering simple tasks, obfuscating both application and business logic. Good developers pride themselves on elegant, maintainable solutions; if the person you've employed is the antithesis of this, your project will be impossible to maintain or extend.

Further reading: '13 breeds of freelancer' (netm.ag/13-291)

THE MANAGEMENT GAP

Regardless of the type of freelance developer who joins your project, there exists a fundamental management gap in many agencies. Agencies primarily see freelancers as a 'resource' to dial up or down as budget allows, so if a freelancer can demonstrate relevant skills, that's often good enough. Beyond this point, they are generally left to get on with the

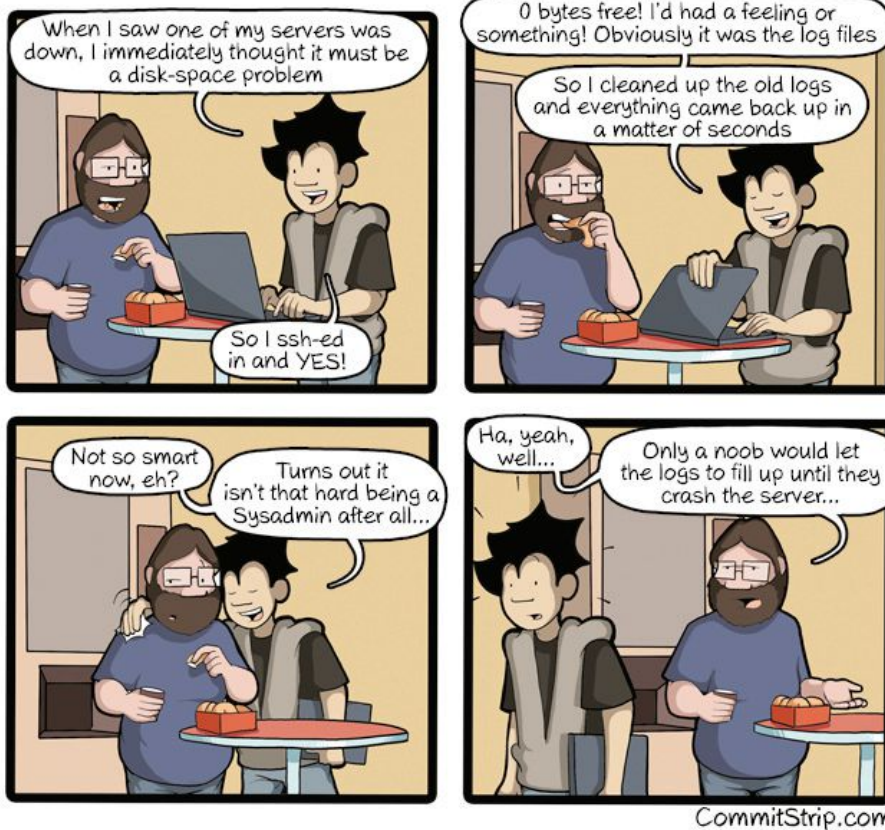
Resources

Throughout the article I've mentioned various resources. You can find a full list at netm.ag/resources-291. In addition to the articles included here, I've added others I've found to be relevant, as well as the links from 'Developing Developers' (issue #290).

As an agency, you'll certainly have your own perspective on how you should manage your freelancers, but I encourage you to look at the articles concerning both

freelancers and business. They should round out your knowledge and give you some idea of the sheer range of skills developers must cover in their day-to-day work.

Developers are by their nature problem-solvers, and are generally curious and passionate individuals, but are human like anyone else. By understanding their point of view a little more you'll be better placed to respond or even anticipate their needs – to everyone's advantage.



Knowledge is power Whilst generalists can get it done, specialists get it done right

work, delivering features that get through QA, but with little accountability for best practices or patterns.

As long as code is committed and features are delivered, project managers are happy; they don't want to be troubled by architectural or maintainability concerns. While this is fine for small jobs, larger or longer-term jobs suffer when the raw material (in this case the code) is not subject to the same quality control that a real-world building project might be.

Additionally, freelancers often remain isolated, both professionally and personally, from their in-house counterparts; a missed opportunity for both parties I'll discuss later. To bridge this unintentional gap, agencies should leverage resources they already have – senior developers, and time – to assess, monitor and support freelancers.

Further reading: 'It's bad for your agency when your freelancers are the black sheep' (netm.ag/sheep-291)

ASSESS

The first chance you'll get to assess someone's skills is at the hiring stage

– though you should look to make it an ongoing process. In my experience it takes around three projects to become proficient in a particular framework or technology, so look for a track history. You need to gauge what they know, what they don't know, and how they approach problems when unsure.

Look over their code together, ask what they're proud of, what they wish they'd done differently, and if they made any mistakes along the way. You could also set them small coding challenges to gauge their aptitude for particular tasks.

Remember, you're trying to determine their skill shape, their developmental self-awareness, and how best you may utilise and support them.

Further reading: 'On I-shaped and T-shaped skills' (netm.ag/shapes-291) and 'Every new hire has three jobs' (netm.ag/three-291)

SET UP

Ensure the onboarding process is smooth. Show them where everything is, and introduce them to everyone on (and off) the team. Allow them to ask questions, and make sure they know who to go

Code reviews

Code reviews are exactly as they sound; a way to review a developer's code, focusing on how it is written, rather than whether it works, which would be covered by unit tests or formal QA.

There are various ways to conduct code reviews, ranging from the very formal (using a combination of software, checklists and human input) to just an 'over the shoulder' review.

The kinds of things you want to review may depend on how long you've been working with a freelancer. In the first instance, I would concentrate on more general things, such as naming, code reuse, location, structure, how the code fits with the existing project, and particularly bad habits or questionable idiosyncrasies that look like they might cause problems later.

As each ticket and feature is completed, delve a little deeper. Check the design patterns that have been used are appropriate and implemented correctly, and that code is not over-engineered and (if appropriate) built in a way that encourages reuse.

Whilst code reviews are a great way to ensure that only quality code is checked in, they are also an excellent way to disseminate knowledge of the codebase itself from those who have worked longer on the project. Additionally, they can be used to introduce more junior developers to techniques they may not yet be familiar with, such as clean coding, third party libraries or design patterns. This will not only will benefit the project, but improve the developer's skills for the remainder of the project.

Pair programming

Pair programming is when two developers sit at the same computer and work on a single problem together, the idea being that two heads are better than one. Concentrating on a new task or existing problem, they take it in turns to type and observe.

Most commonly the one who is typing is called the driver, and the one observing is called the navigator. Whilst the driver is focusing on the task, the navigator is spotting mistakes, thinking further ahead in the problem, and helping to bounce ideas off the driver. All the time they're talking to each other.

Though this sounds counter-intuitive at first, in the context of freelancers within your business it can be a useful tool to help get new developers up to speed on a project, as well as helping your in-house developers get to know the new staff member. Both developers will likely know things the other doesn't, so it will be beneficial for both parties.

Statistics vary, but Wikipedia reports that 95 per cent of surveyed programmers stated they were more confident in their solutions when they pair-programmed. It also helps developers get better at communicating ideas and allows them to see problems from the perspective of others.

It should be noted that this approach doesn't work for everyone – for example, a developer may find it difficult to write code without the freedom to experiment, or shift from the 'solo' to the 'pair' mindset. However, in the right context it can be extremely helpful.



- to for support. Encourage peers to drop by in the first few days.

Often, mundane things like logins and lists of internal documentation is built up in dribs and drabs. Consider a master list that can be tailored to each freelancer. Make sure existing projects are documented and setup is easy, with README files and lists of URLs and tools freelancers will need.

Ensure incoming developers are using a good code editor and the right tools, shortcuts and workflow. Everyone has their preferences, but it's wasteful when these impact on productivity – or worse, codebase reliability.

Further reading: 'Increase your devs' productivity' (netm.ag/productivity-291)

SUPPORT

Between stand-ups and linting lie code reviews, which if done right catch all kinds of problems and help your developers improve. Anyone can be guilty of crimes against code, so make it a priority to review your freelancers along with everyone else.

When it comes to foundational technology choices, involve in-house developers as they'll be the ones maintaining the project when the contractor has moved on. Be wary of 'quick wins' or being sucked in by the latest shiny thing if the project is to live for a while. By spotting and correcting small problems now, much bigger problems can be averted later.

Further reading: Boxout on p79 and 'How to perform a good code review' (netm.ag/review-291)

MENTOR

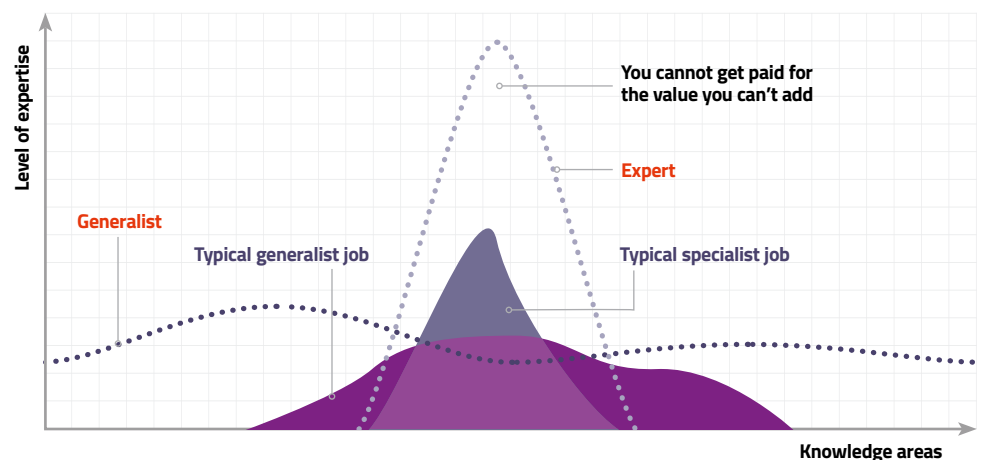
For longer-term projects, partner freelancers with in-house developers at the same or a senior level. Mentors should quickly identify thinking, practices or implementation that will contribute to technical debt, and work with the freelancer in question to level-up. This could include highlighting bad habits built up through isolation, or introducing known solutions they may not yet have had the chance to learn.

Further reading: 'Getting to 10x (Results)' (netm.ag/10-291)

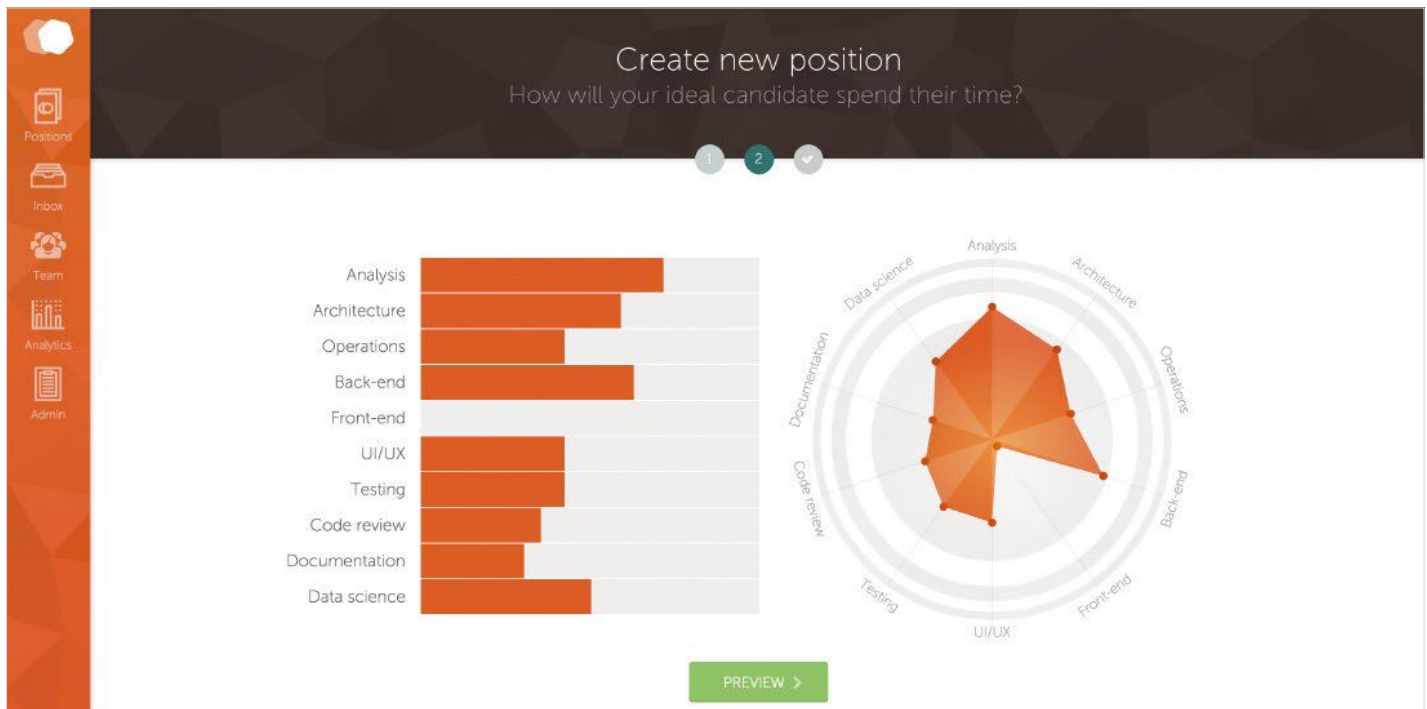
MAINTAIN

Without doubt the biggest problem I see on freelancer-led projects is the build-up of technical debt. Not only does it reduce a team's momentum, but it also burns budgets. It should be a priority to pay back debt as quickly as possible. Auditing, debugging and refactoring the codebase also provides additional insight, so build in time for maintenance work, either as units of work for feature releases, or as dedicated maintenance sprints. A project's most valuable asset is its codebase; make sure it doesn't become a liability.

Further reading: 'The human cost of technical debt' (netm.ag/debt-291)



Specific skills It can be useful to look at project 'resource' in terms of I and T shaped skills



Skill shapes Companies such as Workshape look at developer skills in terms of an overall 'shape'

COMMUNICATE

One of the downsides of freelancing can be a feeling of isolation. Even in-house, the 'production line' nature of larger agencies plays a part in this disconnect. Freelancers are 'here today, gone tomorrow' so staff may not take the time to get to know them.

Helping freelancers feel at home will contribute to making them happier, and give them the chance to learn more about your business and culture. Encourage

COLLABORATE

To quickly get new developers up to speed on a project, or to help them understand existing technical debt, consider 'pair programming'. This is where two devs work side-by-side on the same code.

Conversely, when bringing freelancers on board who have new and exotic skills, take full advantage of this by getting them to introduce these new techniques or best practices to your developers. Perhaps your freelancer is a testing

CAPITALISE

Developers are generally the last link in the chain, but not getting their input further up is a mistake. Watch out for situations where the design has dictated a contrived technical solution; a new hire may not have the clout to push back, so listen to them and support them.

You wouldn't let a decorator dictate the foundations for your house, so don't do the same with a website. Account handlers can pull the same trick. I once asked an account handler why we would sometimes get 'impossible' briefs and he told me straight: "It's not my job to know what's possible; it's my job to sell the agency to the client."

Extra resource: Short film – *The Expert* (netm.ag/film-291)

Encourage freelancers and staff to feed off the mix of skills and take an interest in each other's work

everyone to feed off the mix of skills and take an interest in each other's work.

I think it helps to hold exit interviews with your freelancers too. Their unique position in your company can be useful for flagging up things you otherwise may not be aware of.

Further reading: '4 excellent techniques for managing devs' (netm.ag/excellent-291)

expert and as an agency, you generally don't test. Or perhaps your freelancer knows several SPA frameworks, and you're looking to get into this area. Make sure to use your freelancers as more than just a way to add features or provide fixes.

Further reading: Boxout on p80 and 'When does pair programming work?' (netm.ag/pair-291)

MOVING FORWARD

The approaches I've outlined here stem from over 15 years of contracting, and although not exhaustive, I hope they've provided the perspective to help you get the most out of your freelancers on future projects. If you want to explore further, take a look through the resources listed. Good luck! [n](#)

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- Organise your CSS to create reusable and maintainable code
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PROJECTS

Tips, tricks
& techniques

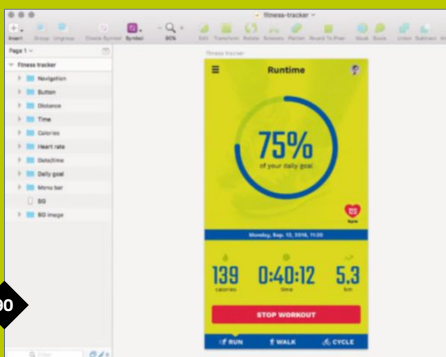
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BROWSER SUPPORT

We feel it's important to inform our readers which browsers the technologies covered in our tutorials work with. Our browser support info is inspired by @andismith's excellent Can I Use web widget (andismith.github.io/caniuse-widget). It explains from which version of each browser the features discussed are supported.



EXCLUSIVE VIDEOS

Weren't able to attend one of our Generate conferences? Then we've got the next best thing: videos of the best talks from past events, for you to check out free on YouTube. Just head to www.youtube.com/creativeblog where you'll find sessions from the likes of Mike Monteiro, Brad Frost and Lara Hogan.



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performance, content
delivery, images

**q: what has made you smile
this month?**

a: Attending my child's
Jedi training camp birthday
party



*IMAGES

5 STEPS TO EFFECTIVE IMAGE MANAGEMENT

Michael Gooding discusses how to tackle the growing complexities of image management for an online business

> One thing that's guaranteed to have a positive effect on your users' experience of your website is the use of images. Users are more likely to engage with and revisit your site if there is strong, impactful visual content. On average, images account for more than 60 per cent of bytes per web page, and they have become an essential part of a brand's profile and its success with customers.

However, supporting and maintaining the use of images on a website can be a challenge, and needs careful consideration. There is a balance to be struck between designing an eye-catching website and

ensuring it meets the necessary legal, financial and security obligations.

A good image management strategy must reduce risk and maximise opportunity. There are five key elements to consider: creative teams need storage and discoverability, users expect mobile engagement, security requires safe image transformation, operations require a reliable disaster recovery and business continuity plan, and marketing and finance want an SEO and bot strategy. In this tutorial I'll go through each of these elements, and consider how they combine to make an effective strategy.

1 STORAGE AND DISCOVERABILITY

You no doubt already have a storage strategy for images. This might be simply a common file store for drafts and final images, or it may be more complex, with fully featured digital asset management (DAM) solutions that track all videos, images and derivative content, with enforced workflows and tagging. The key (particularly for commerce sites) is to ensure that products have associated image sets.

The goal of your storage strategy should be to remove duplication and implement logical and efficient workflows. Remember, your image storage solution will vary based on business requirements – what works for one company will not necessarily work for another, and buying in a complex DAM may be overcomplicating a process that could be as straightforward as a set of checklists and procedures. Let's take a look at some guidelines.

Small libraries

If you only have a few hundred images, centralising your storage and giving access to the relevant people may be a good enough storage strategy. An additional

Your storage strategy should be removing duplication and creating efficient workflows

store for derivative or work-in-progress content could help provide designers with an easy-to-access workspace, as well as making it simple to identify images ready for the web. All images must adhere to a strict naming convention and provide information on current status, use cases and content.

Medium libraries

Once an image library starts to go above a thousand images, better searching and tagging capability becomes a must-have. With larger numbers of images often comes a larger creative team, so version control is important. Reporting to show where images are used is also important, otherwise you'll end up with old orphan images in your library that are no longer used.

This problem becomes compounded if you ever need to do any batch processing on your library – for example if a new image size is required for all your images in a new screen layout. Your agility when rolling out changes is dramatically reduced when significant time is required to process large numbers of orphaned images.

* CHECKLIST

TOP TIPS FOR FAST AND BEAUTIFUL IMAGES

+ Serve the right size image

Be sure to resize all images so they're close to the size displayed on screen. On mobile connections this will reduce the time over the network as well as the processing and painting times on the device. Even on large desktop screens, resizing images can help improve performance.

Reduce quality to save bytes

Displaying images on the web doesn't always require an unaltered, pristine image; reducing quality can often yield no difference to the human eye but save substantial bytes. Remember, quality levels vary between tools so be sure to familiarise yourself with the outputs of your chosen image editing tool, and choose a value that offers as a good balance between size and quality.

Use the correct format

Different image formats have different use cases, so make sure you are using the optimal format for the situation. For example, if you are not using transparency then JPG may be a better format for product images than PNG.

Explore new image formats

New formats such as WebP, JPG XR and JPG 2000 can reduce bytes by up to 30 per cent with little to no impact on quality. Browser support is limited for each format, but more and more tools are offering automatic detection and delivery of the best format, to help reduce the complexity this introduces.



Storage concerns A good storage strategy should remove duplication

► Large libraries

When image libraries get really big, a full DAM plan will be required. As well as storing images, the solution needs to offer more complex features – for example, enabling users to track the digital rights and licensing costs of third-party sourced images, run full audits on all work that has been carried out on an image, or track when and where an image has been published. There may also be a more complex workflow built into the DAM.

2 GOING MOBILE

We all know that having a good mobile strategy is important in order to reach and engage users, but it's not just about serving content formatted for individual devices. Images also need to be a part of the mobile strategy, and coupled with responsive web design can improve the layout to offer a better mobile experience.

Images that have not been optimised for mobile can dramatically drain a user's battery, slow a site down by consuming large quantities of memory, and command excessive cellular bandwidth. All of these factors negatively impact the user experience and ultimately can impact revenue and brand reputation. Our research has shown that online retailers can improve conversion rates by 10 per cent or more by optimising images specifically for mobile.

Responsive images

Responsive images are a key pillar of a mobile image strategy, alongside new image formats and advanced features such as chroma subsampling. The challenges presented by different screen sizes, browsers, OS versions and constrained CPU, memory and connectivity are not limited to mobile, however – desktop, web and app users all experience these challenges to different extents. A good mobile image strategy targets each device group differently to deliver the best user experience possible.

Speedy service Serving the right image formats and sizes for each user will help ensure they're not left waiting



Sending the right size and depth image, compressed appropriately, does improve network and device performance. Using one image for different screen sizes results in serving too many bytes over the network, which will ultimately get thrown away as the device scales the image down. All of this has an overhead within the device too, whether on CPU, RAM or battery life.

The right size

There are many ways to ensure you send the correct size images, but the simplest is to use the native browser solutions.

```

```

The `image` tag above shows two additional attributes for `srcset` and `sizes`. `srcset` informs the browser there is a selection of images it can choose from. Each image contains a width descriptor, shown after the file name and using the `w`. By telling

Online retailers can improve conversion rates by optimising images for mobile

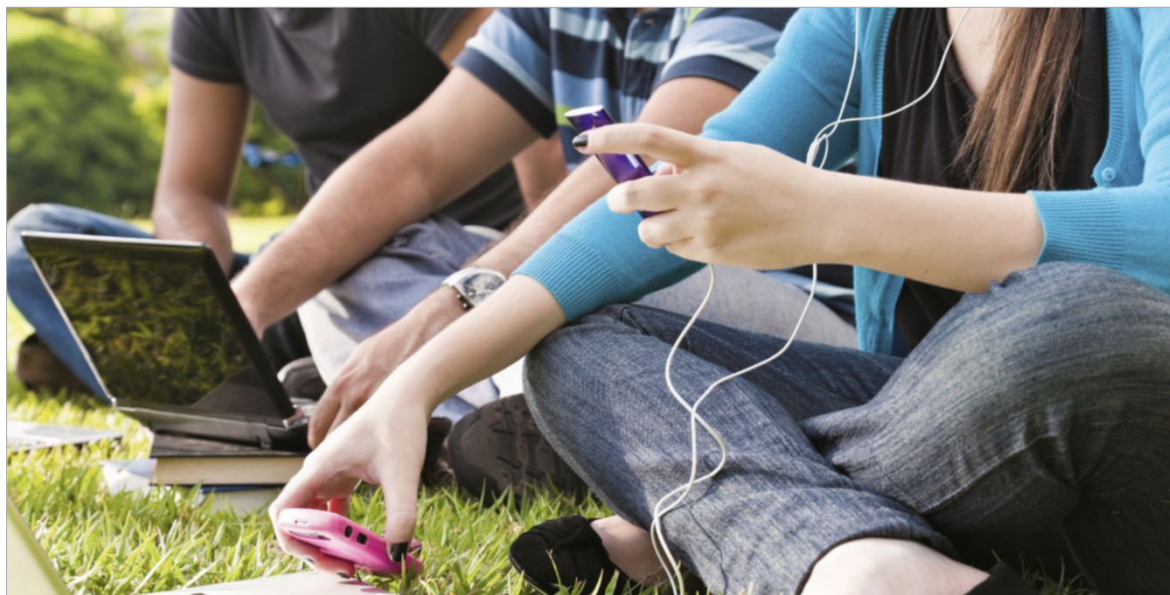
the browser how big each image is, we can help guarantee the correct one is chosen. `sizes` helps describe to the browser when to select each image size. In this example, the code explains that:

- Screens up to 400px wide should use the small 320px image
- Screens up to 800px wide should use the medium 640px image
- All other screens should use the 1080px image

The browser will select the first match, so you need to define the minimum and maximum boundaries correctly as you progress through the sizes.

In addition to using the absolute image size in the `sizes` attribute, it is also possible to use relative widths using the `vw` descriptor, which represents the viewport width per percentage.

```
sizes="(max-width: 400px) 100vw, (max-width: 800px) 50vw,
33vw"
```



Mobile strategy Optimise the size and depth of images to ensure they're responsive on different devices

This represents a common responsive design, where a small device has a single column and images fill 100 per cent of the width. As screens get bigger, the design moves to a two-column design and images fill 50 per cent of the screen. As we move to full desktop screens, the design adopts three columns and images fill 33 per cent of the screen.

```
<picture>
<source media="(max-width: 400px)" srcset="small.jpg">
      <source media="(max-width: 800px)"
srcset="medium.jpg">
<source media="(min-width: 801px)" srcset="large.jpg">
      
</picture>
```

The code above achieves a similar result to the previous example using `srcset` and `sizes`. However, this example also uses a `picture` element made up of `source` attributes. Each one contains a media query and sets out a `srcset` of images to be used (here only one image is defined). There is a simple image tag included in the `picture` element for fallback. In addition to what is shown above, `source` attributes can contain images for different screen resolutions, as well as a `type` attribute to check browser support for certain image formats.

New image formats

The JPG and PNG image formats are over 20 years old but remain popular. However, a lot has been learned about image transcoding and compression, and there are newer image types available. Often these formats offer similar quality levels, but with up to 30 per cent byte savings in comparison to JPG and PNG. This helps when delivering over the network, but also reduces the memory footprint required to display the images on mobile devices.

There are three new image types to select from:

- **WebP**: Only supported in Chrome
- **JPEG XR**: Only supported in IE Edge
- **JPG 2000**: Only supported in Safari browsers

The browser support introduces a dilemma. Do the byte savings outweigh the downside of potentially requiring four formats for each image in your library?

Once the formats have been created, you need to be able to deliver the correct image for each browser. The `picture` element provides a simple mechanism for the browser to check support of certain image types and select these ahead of more traditional JPGs and PNGs. The code below is an example for adding the small image in WebP format.

```
<source type="image/webp" and media="(max-width: 400px)"
srcset="small.webp">
```

While the delivery of different image formats is relatively simple, the code involved in creating a fully responsive image that considers size of screen, screen resolution and supported format can become long and unwieldy.

Chroma subsampling

The human eye is more sensitive to changes in light than changes in colour. This can be used to our advantage when compressing images. An image has two channels: a luma channel for light and a chroma channel for colour. For each pixel in the chroma channel there are four pieces of information stored for red, green, blue and the transparency.

Chroma subsampling is a technique used to reduce the number of pieces of information required for the red, green and blue data. Samples are taken across different pixel ranges; the more aggressive



★ IN-DEPTH

FURTHER READING



For more information about the topics I've explored in this article, check out these resources.

6 things to consider when selecting a DAM

netm.ag/DAM-291

A useful list of things to consider when purchasing a DAM.

Responsive Images 101

netm.ag/cloud-291

This 10-part series by Jason Grigsby is a must-read – it provides a great introduction to responsive images.

Image Optimization

netm.ag/google-291

The Google Developers' guide to optimising images covers some more great topics.

Image Tragick

imagemagick.com

This site contains some of the latest vulnerabilities and practical mitigation advice, a must-read if you use this transformation service.

Manage, don't block bots

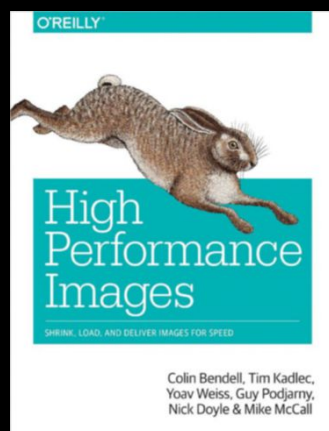
readwrite.com/2016/02/29/managing-bots

An article that explains why blocking bots isn't always the best approach, managing them is a lot better.

High performance images

netm.ag/perform-291

This book covers a lot of detail around many of the image strategy topics.



- ▶ the subsampling, the fewer samples are taken. This technique reduces the detail in the colour, but maintains the high level of contrast in the luma channel. Although there is a reduction in colour detail, very few people will ever notice.

The result of an image subsampled to 4:2:0 will reduce device memory usage by half, and further reduce file sizes by 18 per cent. For example, a 1300 x 1024 image could require 4MB of RAM, regardless of the format. Converting to 4:2:0 can reduce the memory to 2MB. Images that use less memory load faster.

3 SECURE TRANSFORMATION

Regardless of your workflow, any point where images are transformed, converted or otherwise modified can create unintentional security risks. That is not the job of someone else – we all have a role to play, and the number of critical vulnerabilities related to image editing has increased over the years.

In 2016, the ImageTragic vulnerability notably targeted ImageMagick installations with a remote code execution exploit. It might sound alarmist, but the fact is that a manipulated JPEG image could easily compromise your entire business and create a thoroughfare for malicious activities. Image graffiti – adding advertising or dubious messaging to your images – is another potential security risk.

So, what are the routes by which a contaminated image could enter your workflow?

- User-generated images; compromised at source
- Vendor-supplied product images; compromised at source
- In-house photography; compromised by malware on the artist's laptop

There are two major considerations in a secure image strategy. First, secure delivery. Use TLS (HTTPS) to ensure the image you send is the one the user sees. Many public Wi-Fi hotspots and some cellular providers intentionally lower image quality to reduce bandwidth costs. This same technique can be used to graffiti images.

The second consideration is a secure image transformation architecture. This not only has a patch strategy, but also an architecture isolation strategy. As a baseline, any automation or toolset used in image transformation should contain at least three layers of isolation to ensure that even if it is compromised, it will be limited in scope.

The topic of secure image delivery is a very lengthy and complex discussion. It should be paramount in an image management strategy, but it is often overlooked.

4 DISASTER RECOVERY

At some point you will experience downtime, and images are a vital aspect to consider in your disaster recovery (DR) plans. And just as important as having a plan is understanding how long it will take to fix things: the mean time to repair (MTTR).

I have seen customers experience security attacks that have made their data centres and other services inaccessible. In one instance, the recovery plan was initiated, but because of all the mobile-optimised images and their small file sizes, it was going to take eight hours to restore.

Making a plan

Should the worst happen and you lose access to all of your images, there are several key factors for your strategy. First, it is important to consider the time required to restore your image library. Larger libraries can often take days to move around, and this can have a large financial impact on any website if you are forced to wait to get back online.

Prioritising the images to restore first is a good way to reduce the recovery time. Recovering pristine images and getting some content available quickly, while sacrificing performance in the short term, may be a good temporary strategy.

When designing an image strategy, at some point there will be a decision to be made about whether to create derivative images in real time, as and when they are needed, or to create them all up-front. When it comes to DR it is obvious that

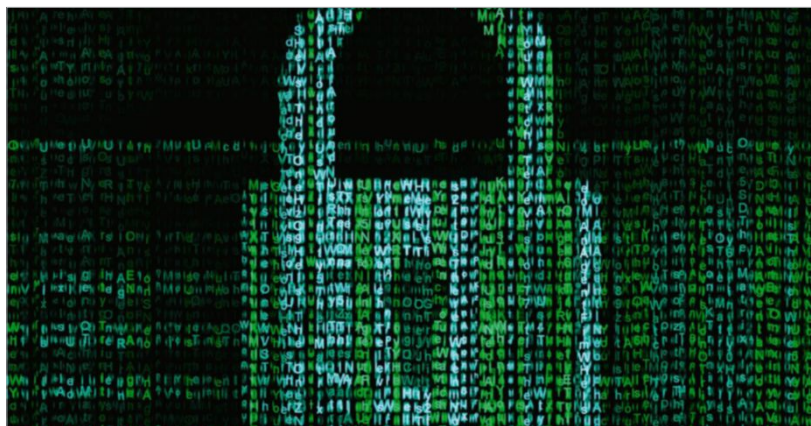
Images are a critical part of any brand profile, and therefore also of your online presence

restoring a pristine library only will be much faster than restoring a complete library.

Finally, building in multiple layers of caching can help mitigate against complete loss. In the best-case scenario you could escape with no loss of service to end users if cache lifetimes are long enough and content is popular enough to maintain its position. However, if you do suffer from some loss, a good CDN will help reduce demand on backend servers while you wait to completely restore content.

5 BOTS AND SEO

Web bots can be both good and bad news, and an image management strategy needs to take account of both types. Some are good for business because



they can drive search engine traffic; others scrape and steal your image content and use it for other objectives. Having the wrong approach to dealing with bots can become a game of cat and mouse that you can't win. Just as with a mobile image strategy, stepping back and thinking about how you can strategically address the bot challenge through images is important.

A few key considerations to include:

- Classify types of bots that are clearly good for business (SEO), clearly bad (scrapers on AWS), or unknown
- Optimise the performance for search bots by delivering smaller resolution images
- Reduce delivery costs for 'bad' bots by delivering placeholder images (1x1 white pixel) or using a blurry, low-resolution image. The goal is to send as little data as possible without causing the bot to detect the counter measures
- Use analytics to track image consumption by friendly and nefarious bots alike, to tune and tweak your countermeasure strategy

Safety concerns For a secure image strategy, you need to consider both image delivery and transformation

CONCLUSION

Images are a critical part of any brand profile, and therefore also of your online presence. Like it or not, the success of your brand and ecommerce channel depends on them, so take them seriously and don't just judge them on aesthetics. You need to cast the same critical eye across every aspect of how your images impact the consumer experience and the business success.

A good image management strategy will make a huge difference. This strategy should address the needs of your internal content creators and external mobile users, security and operational risks, and even manage costs from bots. The objective is to utilise images to increase revenue without causing increased operational costs. **n**



ABOUT THE AUTHOR

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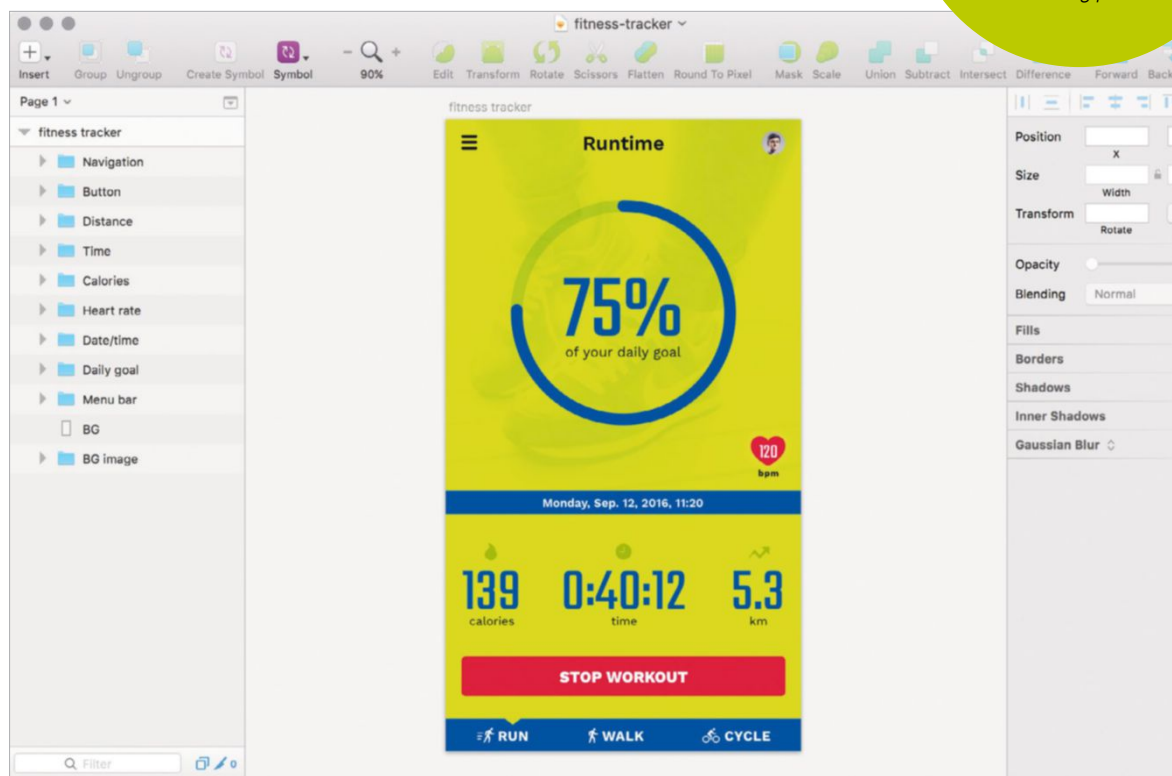
areas of expertise:
Sketch, HTML, CSS

**q: what has made you
smile this month?**

a: My family

[View source
files here!](#)

All the files you need for this
tutorial can be found at
netm.ag/finished-291



*SKETCH

DESIGN A FITNESS TRACKER IN SKETCH

Christian Krammer walks you through how to create an individual screen in your favourite design app

Recent years have seen a raft of measures that help you track your fitness. There's a reason why startups like Runtastic (who are, coincidentally, Austrians like me) are getting bought up by Adidas for \$240m. Everybody wants to know every last bit of information about their latest workout, be it on their wrist with a standalone device, or with an app on their smartphone. And I'm being honest here: this includes me as well.

So I was thinking about what my own take on this type of app would look like. After the inspiration hammer hit me, I laid out the various parts on paper. Then I jumped straight into Sketch, where I started to explore a design. Icons were a vital part here, and the Icon Font plugin allowed me to easily search

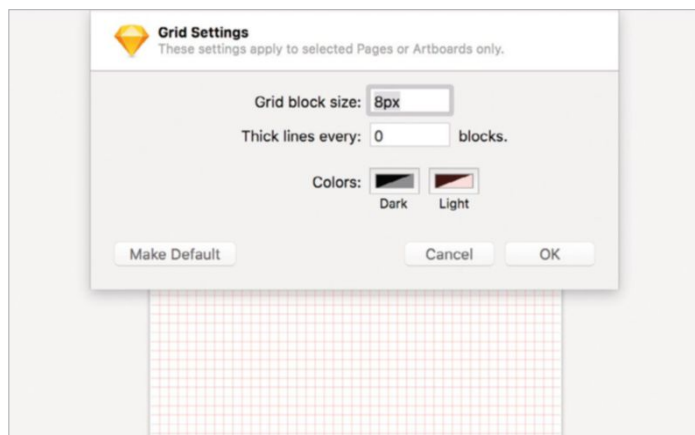
for and pull in the necessary assets into Sketch. Another key was the usage of an eight-point grid, which helped to give the necessary order to the design and fight arbitrary spacing.

For a special treatment of the background image, I heavily relied on blending modes. Without ever needing to open something like Photoshop, you can create very distinct looks for images. When working in Sketch, I rely on keyboard shortcuts as often as possible, as they are usually the fastest way to achieve things.

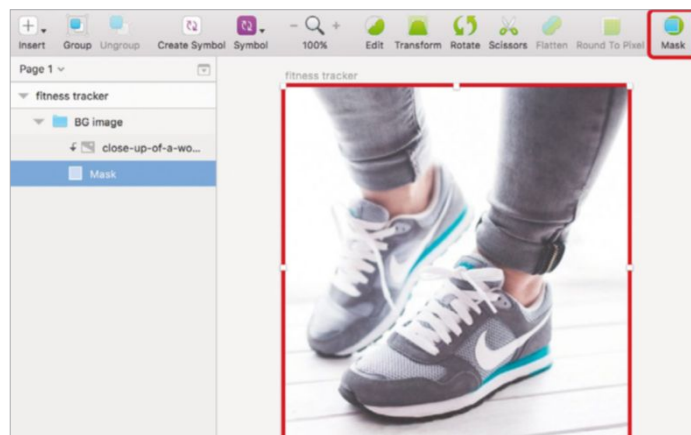
Over the following pages, I'll explain the entire process of how I created my fitness tracker app in Sketch, and run through the various steps that led to the final design.

★ OFFER!

Christian Krammer's *Sketch Handbook* contains 12 chapters jam-packed with everything you need to know about sketch. net readers can get 20% off with the code **NETMAG**: sketch-handbook.com



Step 2 An eight-point grid simplifies the placement of elements



Step 3 Set up a mask for the image that only shows a part of it

01 First, create a new document in Sketch using `cmd+N`. Set up a fresh artboard by pressing `A`. From there, select 'Mobile Portrait' from 'Material Design' in the Inspector panel on the right. With a common ratio of 16:9, this doesn't tie the design too much to a specific platform. Rename it 'Fitness tracker' with `cmd+R`.

02 Before we start designing, let's set up that eight-point grid I mentioned. It's not only an aid for you as a designer but also simplifies the life of your developer, as they can build on a reliable system (see netm.ag/grid-291 for more information). Set it up from `View > Canvas > Grid Settings` in the menu bar, and enter '8' for Grid block size, and '0' for Thick lines

every. Confirming with 'OK' presents you with the brand new grid that we will use to lay out the various elements.

03 For the background image, I landed on visualhunt.com/photo/617. Drag it over to Sketch, and set up a mask. Press `R` to create a rectangle in the top-left that has full-width and a height of 376px, but no border. Drag it below the image in the layers list. Select both and click on `Mask` in the toolbar. Rename this group 'BG image', select the image again and resize and move it so a suitable part is shown.

04 Another element of the background is a coloured overlay. Create a rectangle outside

the group that covers the full artboard (no border), named 'BG'. Set the fill colour to #DBFF0A and save it to the 'Document Colors' in the colour dialog. To blend this layer with the image in the back, select 'Multiply' for the blending of the fill. The image is way too strong now, so set the whole group to 15% opacity (press `1`, quickly followed by `5`).

05 The colours of the overlay and image jar a bit, so let's employ another blending mode to convert it to greyscale. Duplicate the mask layer with `cmd+D`, move it to the top of the group (`ctrl+alt+cmd+Up`) switch off the mask (`ctrl+cmd+M`) and give it a white fill. Setting the blending to 'Color' converts it to a greyscale image, which looks way better.

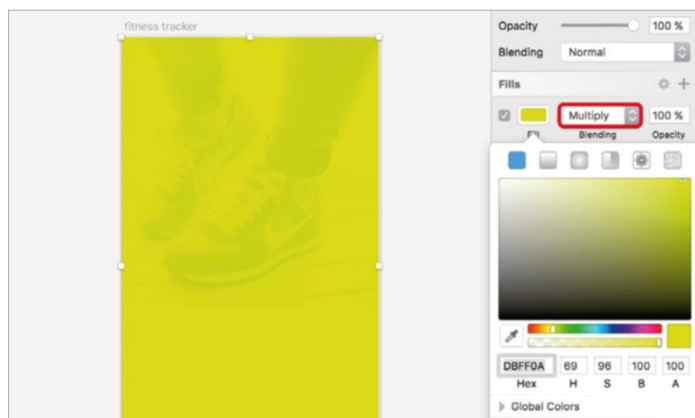
06 At the bottom of the image we want to display the current date and time. Create a new rectangle (360x24, no border) at the Y position of 376. To ensure a good contrast to the background, set its fill colour to #014EFF. Add a text layer (`T`) saying something like 'Monday, Sep. 12, 2016, 11:20.' For the font I've chosen Work Sans (netm.ag/work-291) in SemiBold, 12px, white fill.

07 Select the text together with the rectangle, and centre

* EXPERT TIP

MAINTAINING PLUGINS

Plugins are the ultimate way to enhance Sketch – for example, to add missing features or optimise a certain functionality. Installing and maintaining them can be a bit of a hassle, but luckily there's a little app called Sketch Toolbox (sketchtoolbox.com). Use it to search for plugins, or install and remove them with a click. Once added, they're automatically kept up-to-date by the program. For an overview of available plugins, have a look at netm.ag/plugins-291 or netm.ag/git-plugins-291.



Step 4 Create a rectangle for the coloured overlay, and set to 'Multiply' blending

► them by right-clicking and selecting Align Horizontally or Align Vertically. Finally, create a group named 'Date/time' from them.

08 Before we continue, let's take care of the title bar at the top. For the hamburger icon, create a new 16x3 rectangle, close to the top-left corner (switch off the grid temporarily with `ctrl+G`). Set its Radius to 2 in the Inspector. Set the fill to #020D26 and zoom in to it with `cmd+2`.

09 Now hold `alt` and drag it down to create a copy. It should be 3px away. Press `cmd+D` to create another copy with the same spacing. Select all three bars and click on Union in the toolbar (or press `alt+cmd+U`) to create a single shape. Rename it 'Icon', switch on the grid again and move it away 2 units (16px) from both the left and top edge. Lock it with `shift+cmd+L`.

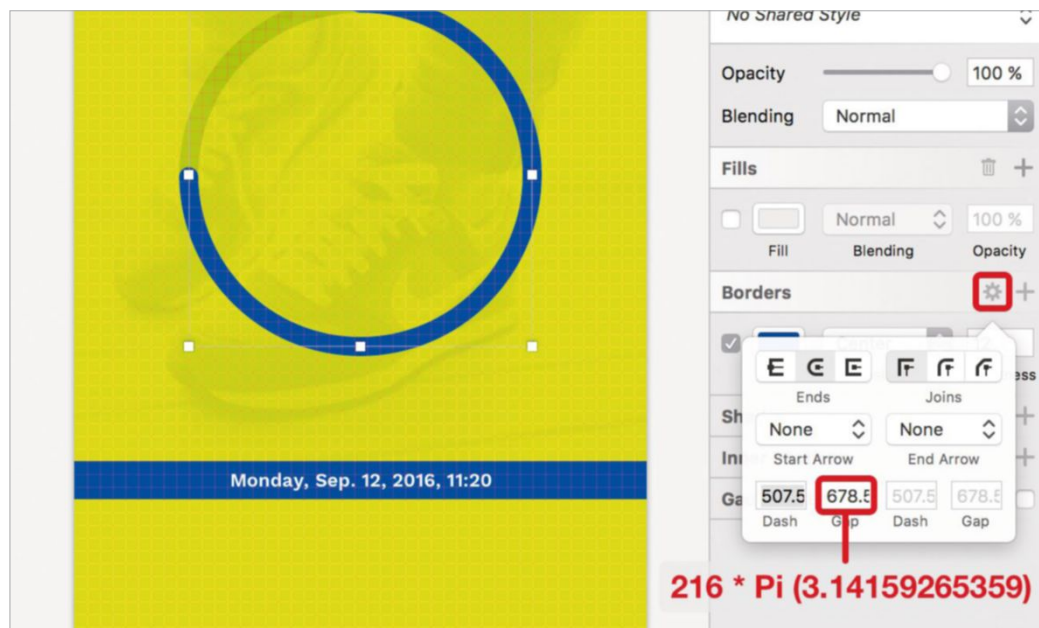
10 Zoom to 100% again with `cmd+0` and continue with a text layer for the title of the app, 'Runtime'. Like before, it's Work Sans SemiBold at 20px, with the same colour as the icon, centred to the artboard. The last element of the menu bar is a profile picture in the top-right corner. It's made of a 24x24px circle (press `O`), moved away two grid units (16px) from the right artboard edge.

11 For the actual picture, use the UI faces plugin (netm.ag/faces-291): Select Plugins > UI Faces > Load random faces, to fill

* EXPERT TIP

FREE PHOTOS, ANYONE?

When you're hunting for the perfect photo for your project, try visualhunt.com, pexels.com, pixabay.com or unsplash.com. They offer high-quality images, most of which are available for free, even for commercial projects. There's even a plugin for Unsplash (netm.ag/unsplash-291) that lets you pull images into Sketch with a single click, and even define which type is inserted.



Step 13 Insert the diameter x Pi into the Gap field and increase the length of the bar with the Dash field

the circle. Rename it 'Avatar', select it together with the title and the icon in the layers list, and centre them to each other with Align Vertically from a right-click. Create a 'Menu bar' group from these elements with `cmd+G`.

12 The next element, the round progress bar with the daily goal, is quite special. Start with a circle with a diameter of 216 (hold shift), with no fill but a centred border with 12px thickness. Use the black from before (#020D26), and set the layer to 20% opacity. Then centre it to the artboard and move it to a Y position of 88. Now duplicate the circle; this time use the blue from earlier, #014EFF, but reset the opacity to 100%.

13 Now the border options come into play; these enable you to easily adapt the length of the progress bar. Click the gear icon to open them and enter the diameter of the circle multiplied by the mathematical constant Pi into the Gap field: `216*3.14159265359`. Confirm with `enter` and copy the value to the Dash field.

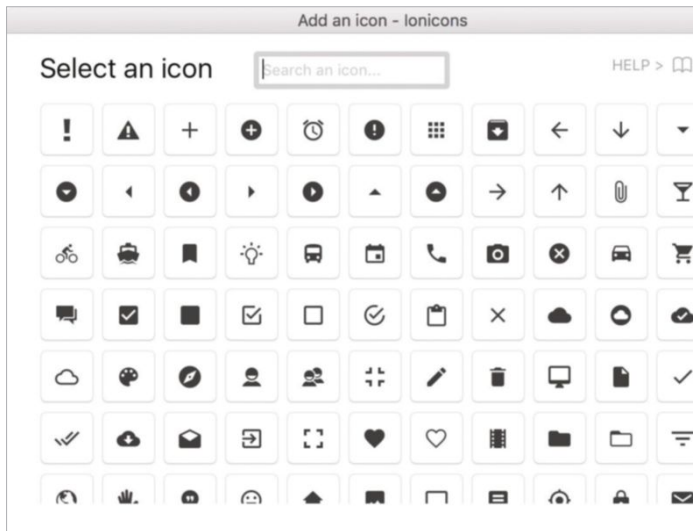
14 See the bar shrink when you hold `shift` and keep pressing the down arrow. Continue until it fills about three quarters of the space. Finally, right-click and select Transform > Flip Vertical, and set the ends to the middle icon.

15 To accompany the bar, add a new text layer with '75%'

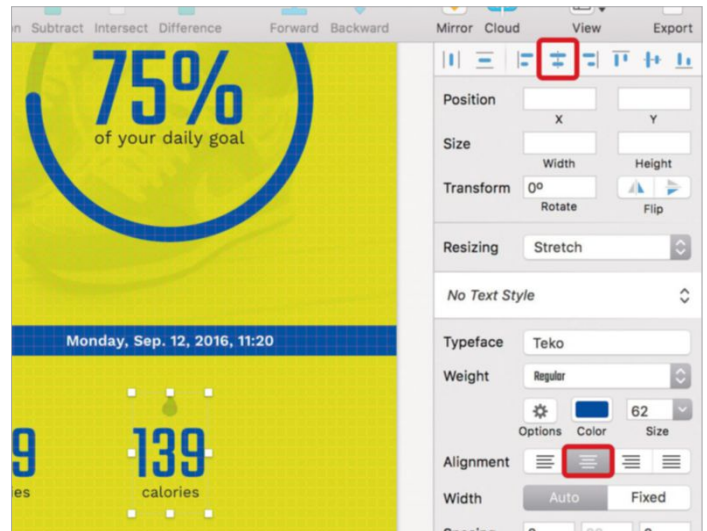
as the content. This time I've used Teko Regular (netm.ag/teko-291) at 94px, with the familiar blue fill (#014EFF). Centre it to the circles on both axes and create the second text layer – 'of your daily goal' – below (I've used Work Sans Regular, 14px, #020D26). Create a 'Daily goal' group from all the related elements.

16 The daily goal is not the only information we are expecting from the app. It should also display the calories, time, and distance of the ongoing workout. Let's start with calories. The first element is the number – 139 (set in Teko Regular, 62px, #014EFF). It should be at a Y position of about 437px, and two grid units away from the artboard's left edge. Right below, we place another text layer for the unit: 'calories' (Work Sans Regular, 12px, #020D26). Centre it to the other layer and place it on a grid line.

17 While the two text layers would technically suffice, why not enhance them visually with a nice little icon? There are a gazillion packs out there to choose



Step 17 The Icon Font plugin provides a wealth of icons to choose from



Step 19 Duplicate the calories, and centre its group (top), as well as its text layers (bottom)

from, but the one method I always fall back on is the Icon Font Sketch plugin (netm.ag/iconfont-291). Although it can be a bit hard to set up (this screencast can help: netm.ag/setup-291), it makes up for that with ease of use.

18 Once installed, go to **Plugins > Icon Font > Grid Insert > Ionicons** in the menu bar, enter 'fire', and select the second icon. Just make sure that no other layer is selected first. Move this icon above the calorie amount, and centre it to this text layer. Leave the font size at 20px. For the fill, select black (#020D26) with 30% alpha.


19 After you have combined all the related elements into a 'Calories' group, this can act as the model for the other stats – time and distance. Duplicate this group, rename it 'Time' and centre it to the artboard (with the fourth icon at the top of the Inspector). Before you start to adapt its text layers, select all of them in the layers list and change their 'Alignment' to 'centred' (second icon) in the Inspector.

20 For the icon, proceed in the same manner as before (use Run 'Ionicons' again from Plugins), but enter 'clock' – select the third icon. This time, make sure that the

former icon is selected first. The value below should be changed to '0:40:12', the descriptor to 'time'.

21 Duplicate the 'Time' group likewise, move it to the right of the artboard, and start over: for the icon use 'ion-arrow-graph-up-right' (at 26px), for the value '5.3', and for the unit 'km'. Rename the group 'Distance' and move it away 16px from the artboard's edge. Lastly, move the icon down a bit.

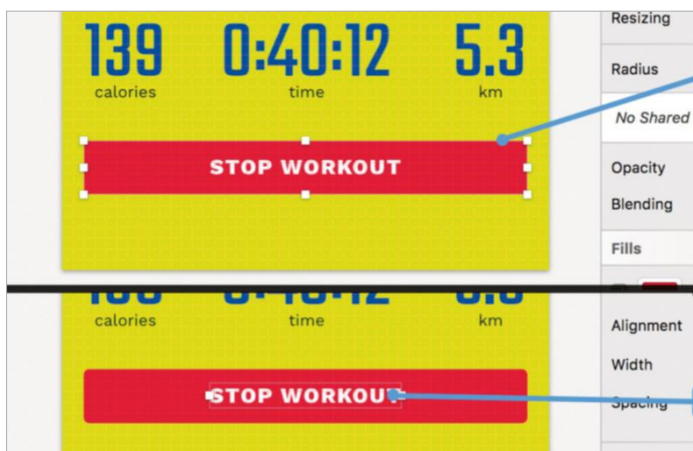
22 The last element we will tackle is the button to stop or start the workout. Create a new rectangle (328 x 40, #D70831, no border) at the bottom with a slight radius (4px), which you centre to the artboard and set to a Y position of 544. Finally, create the button text 'STOP WORKOUT' (Work Sans ExtraBold, 16px, white, 1px character spacing), which you centre to the rectangle, and add to a 'Button' group with it.

23 Well done, you've completed the fitness tracker app! For the rest of the elements – the navigation at the bottom, and the heart rate – have a look at the finished Sketch file at netm.ag/finished-291. 

* EXPERT TIP

KEEP TRACK OF YOUR FONTS

The longer you work as a designer, the more fonts pile up on your hard drive, and the harder it gets to keep track of them. But wait: there's relief in the form of RightFont, a font manager with a huge feature set. It lets you organise your fonts into lists, allows you to install and deactivate fonts quickly, and gives you a quick preview with custom sample text. Probably the best feature of all: apply fonts quickly to text layers in Sketch. Go to gum.co/rightfont/netmagazine to get 15 per cent off.



Step 22 Give the rectangle a radius (top) and the text a character spacing (bottom)



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* HEAD TO HEAD

JSHINT VS ESLINT

Alexander Malinov reviews the strengths and weaknesses of the most popular tools for linting JavaScript code

JSHINT

JSHint (jshint.com) is a fork of Douglas Crockford's JSLint, but more configurable and recent than the original. Its biggest bonus is its simplicity. JSHint scans JavaScript code and reports about commonly made mistakes and potential bugs. This could be a syntax error, a bug due to an implicit type conversion, a leaking variable, or something else entirely. Generally it allows developers to discover problems with their code without executing it.

ESLINT

ESLint (eslint.org) was created by Nicholas C. Zakas, and it is billed as 'The pluggable linting utility for JavaScript and JSX'. The tool does the same things as JSHint, but uses more modern algorithms and has pluggable architecture for configuration. With it you can forget about JSCS, and you don't need to analyse plain code text, but a pre-generated AST-tree. ESLint can be used programmatically through the Node.js API and installed via npm.

RELEASE AND CURRENT STATUS

JSHint was first released in December 2010. The current version (at time of writing) is 2.9.4 from 20 October 2016. Since its launch, it has been through 65 versions.

The first release of ESLint was in June 2013. At time of writing, the current version is 3.15.0, and it's been through 137 versions. The new major versions (v1.0.0, v2.0.0, v3.0.0) will be incompatible with the old versions and you need to migrate to the newer one by rewriting your configurations.

SUPPORT

JSHint is currently maintained by four people. It boasts 225 contributors on GitHub, with 1,915 commits. There are basic guides for contributing, and the code is well tested.

ESLint is maintained by more than 20 people. There are GitHub 447 contributors, with 5,442 commits. There are good guides for contributors and the code is well tested. It also includes an architecture review.

MAIN FEATURES

Linting rules are configurable with JSHint, but there is no easy way to create custom rules, and there is poor support for ES6. The tool is well documented and supports many libraries and frameworks.

ESLint offers custom rules and is well documented. It also supports many libraries and frameworks, including offering full support of ES6 and JSX.

USAGE

Installing JSHint is pretty easy. It works out of the box, and the default configuration is suitable in most cases. On a single file, JSHint is two to three times faster than ESLint.

Installing ESLint is also fairly simple, but first you need to set up the configuration. Despite the fact that it is slower than JSHint, its speed is enough for everyday usage, even in big projects.

VERDICT

JSHint offers a fast and robust way to lint your code, inspired by the approach outlined in Douglas Crockford's *JavaScript: The Good Parts*. If you're after a tool that's ready to use out of the box, that's the best choice. But if you're after flexible configuration and would rather go for the best parts of JavaScript and use JSX and ES6, take a look at ESLint.



FACT FILE

WHAT I USE

In my everyday work I use ESLint as a plugin for PhpStorm/ WebStorm, Atom and build tools (gulp, webpack). My choice is motivated by working with Node.js, ES6 and React, and I can create custom linting configurations for different projects.



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HTML, CSS and SVG

q: what has made you smile this month?

a: I heard my cat snoring













* CSS

GET CREATIVE WITH CSS TRANSFORMS

Eva Ferreira shows you how to use the CSS transform property in new and exciting ways, to liven up your layouts

BROWSER SUPPORT
2D TRANSFORMS

Desktop	Mobile/tablet
4	55
	
3.1	3.2
	
11.5	12
	
12	2.1
	
3.5	51
	

> It's just another day at the office and the last thing you want to do is place another stock image in your HTML. To help spark your Monday motivation, I'd like to show you how you can visually boost stock photos with a few lines of CSS.

Since 2009, the transform property has changed the way we see the web and improved the lives of developers, designers and users alike. This property enables you to modify elements by rotating, scaling, moving them and so on. Although they tend to be associated with animations, the truth is that transforms are extremely useful for any situation

where we wish to modify layout and escape the ordinary, rectangular web. Apply a transform to a rectangle or square and you can create geometric shapes such as rhombuses, parallelograms, trapezoids and even polyhedrons.

Side-stepping a typical, rectangular layout today means talk of clip-path and shapes; two CSS properties that have been around for a while but still aren't properly supported in many browsers. But luckily for us, we can enjoy similar levels of creativity using the transform property, which is widely supported on every major browser.

For this demo, I'll use not only transforms but also blending modes, a property that defines how one layer interacts with another. These can be applied to images, videos and iframes. They are not currently supported in Edge and have some limitations in Safari, but you can use a `@supports` feature query to fix any compatibility issues. There are multiple blend modes available, I recommend you check them out for yourself at CSS Blender (netm.ag/blend-291), a project by Sara Soueidan.

GET STARTED

In this demo we will build from scratch a hero banner that contains an image. For this, we'll need a high-quality picture (preferably 1920 x 1080px), a container `div` element and an `img` tag.

Our HTML will look like this:

```
<div class="header">
  
</div>
```

Transforms are extremely useful for modifying layout and escaping the ordinary

Here comes the magic! Our first task is to make this image a hero banner – this means it will resize to the user's viewport. In order to achieve this, our `.header` needs to be `100%` wide and `100vh` tall. We will also add `position: relative;` and `overflow: hidden;`, two properties that will be useful later when we add and transform the image's pseudo-elements.

Once we have set up the container, we need to work on the image, which will also resize to the user's screen. It will fit the container's width and height with `width: 100%;`, `height: 100vh;` and `object-fit: cover;`. This last property defines how an element responds to the size of its container and will ensure the image keeps its original aspect-ratio and doesn't over-stretch in X or Y.

So far, our CSS code looks like this:

```
.header{
  width: 100%;
  height: 100vh;
  position: relative;
  overflow: hidden;
}
.header-image{
```

```
width: 100%;
height: 100vh;
object-fit: cover;
}
```

ADD PSEUDO-ELEMENTS

Now our basic HTML and CSS is done, it's time for the creative bit that will make our stock images stand out from the rest: we will add `before` and `after` pseudo-elements to our header. These will have the same width and height of the container and the transform property, and be applied with a skew angle of 45 degrees (one with a positive value, the other one with a negative).


Then it's just a case of adding some colour. Once we've done that we should have two inverted parallelograms that form (depending on the size of the photo) either a hexagon or a rhombus in the overlapping area, highlighting the centre of our image. These two elements will have background colours with 0.6 opacity. I recommend you choose two complementary colours that go well with the website's brand. For this demo I have picked `OrangeRed` and `LimeGreen`, but make sure to try out different schemes.

Our pseudo-elements should look like this:

```
.header::before, .header::after{
  content: "";
  display: block;
  position: absolute;
  top: 0; left: 0;
  width: 100%;
  height: 100vh;
}
.header::before{
  transform: skew(45deg);
  background-color: rgba(255,70,50, .6);
}
.header::after{
  transform: skew(-45deg);
  background-color: rgba(50,205,50, .6);
}
```

Finally, let's add the blending modes to our experiment. In this demo I will add `mix-blend-mode: hard-light;` to `.header-image`, which will blend with the `::before` element, and then a `mix-blend-mode: soft-light;` to the `::after` element.

FINAL WORDS

Customising stock photos doesn't just benefit your users – it's an opportunity to get out of your ruts and learn something new along the way. Check the final design on CodePen: netm.ag/transform-291. 



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q: what has made you smile this month?

a: My son's been telling that when he's a grown-up he is going to build a farm with two cinemas (one for dinosaurs)

[View source](#)

[files here!](#)

All the files you need for this tutorial can be found at netm.ag/aframe-291



* 3D

CREATE A 3D SCENE WITH A-FRAME AND VUE.JS

David Storey shows you how to combine A-Frame and Vue.js to quickly put together a creepy, three-dimensional ghost train experience

> VR is making big strides in the browser right now, thanks to WebGL and three.js. But for those used to working with a DOM and manipulating nodes, building 3D scenes requires a bit of a shift in mindset. A-Frame from Mozilla, a web framework for building virtual reality experiences, makes things easier for us, allowing the rapid creation of 3D content with familiar HTML-like markup.

One cool thing to be aware of is that any changes you make to your A-Frame markup are automatically reflected in the scene. This means we can leverage all the benefits of pairing it with a view framework like AngularJS, React or (as we're going to do here) Vue.js. Vue is intentionally a lot closer to vanilla JavaScript to work with than Angular or React, but still brings the benefits of things like data-binding and custom components.

BASIC SCENE BUILD

In this tutorial, we're going to use A-Frame and Vue to create a creepy 3D scene. To get started, get hold of the source files we've provided and take a look at step 1 (netm.ag/aframe-291). All we're doing

here is including the A-Frame library and creating a simple scene.

You'll notice several elements like this:

```
<a-plane color="#6a41a8" height="2" width="4" position="0 1 -2" rotation="0 0 0"></a-plane>
```

These are `plane` elements. They're the simplest feature of a 3D scene: a single-sided, flat surface. We are using these for the walls, floor and ceiling. Since we are working in three dimensions, the position and rotation attributes have three values. The material attribute is where we specify the texture for our plane (the image or colour we're going to paint on it). You'll also notice:

```
<a-entity camera="userHeight: 2" look-controls wasd-controls position="0 2 2" rotation="-45 0 0"></a-entity>
```

This is the camera – the viewpoint from which the user will look into our scene. We've configured it so the user can look and wander around at will. Load the example in a browser and try it out.

RESOURCE

Inspired to learn more about using A-Frame? Here's a great list of guides, components and demos: netm.ag/resource-291

ADDING A MONSTER

The scene is a little lacklustre, so let's add a monster (step 2 of the repo):

```
<a-obj-model position="0 0 -5" rotation="0 0 0" scale="1 1 1"
src="monster-ghost.obj" mtl="monster-ghost.mtl"></a-obj-
model>
```

The `obj-model` attribute is pointing at a `.obj` file we've included in the project. This is a 3D model that's been created using Blender. While A-Frame is great for quickly building simple stuff with primitives (planes, cuboids, spheres), there'll be times when you want to create something more advanced. This technique can be used to load highly complex models, but here all we're doing is adding the rough outline of our popup monster.

We now have a static monster in place; let's give it some life by animating it. This is as simple as adding an `a-animation` node inside our `a-entity`:

```
<a-animation attribute="rotation" from="-90 0 0" to="0
0 0" delay="500" dur="2000" fill="both" repeat="-1"
easing="ease-out-bounce"></a-animation>
```

We've set the animation to repeat indefinitely so the viewer doesn't miss it (this can be changed to any numeric value). The animation also feels a little linear, so let's introduce some easing by adding the easing attribute with a value `ease-out-bounce`. Now the animation has a satisfying bounce at the end. You can see this pulled together in step 3.

CREATING A COMPONENT

What if we want to have multiple monsters, or to configure different types of animation? This is where Vue comes in, allowing us to make our own monster component. First off, we need to instantiate Vue. This involves including the Vue library, ensuring



Speedy scene With the help of A-Frame, we are able to quickly put together a simple (if slightly plain) 3D scene

* CASE STUDY

GHOST TRAIN BUILDER

+ This tutorial is based on a recent project at Realise called the Ghost Train Builder (www.ghosttrainbuilder.com). When we first came up with the idea, the aim was to offer a highly customisable experience without having to hard-code every potential combination of user choices. It was for this reason we identified Vue.js a perfect fit – only requiring knowledge of HTML, CSS and JavaScript, it offers templating and is purpose-built for creating user interfaces.

The Ghost Train Builder uses Vue's templating capability to pull in appropriate A-Frame mixins to add skins, music and other options to the A-Frame markup from data files containing user choices. Mixins are predefined A-Frame properties that can be added to entities and reused a limitless number of times. The combination of mixins and the user data file is responsible for the vast majority of the customisation you'll see on the Ghost Train ride.

Room themes, monster skins and their animations, and lighting effects were created in this way. A-Frame entities in set positions have mixin names added from the user data. This allows the Ghost Train to use predefined settings such as lighting styles, monster skin images and animations, and place them on entities in a way that the user decides. Each user's configurations are then stored in a database, in exchange for a unique sharing URL.



* RESOURCES

FURTHER READING

+ Using technologies such as A-Frame and Vue.js for the first time can be daunting. Thankfully, there's a lot of inspiration out there to help you build up your knowledge and inspire your own creations. Here's some of the resources we used when creating the Ghost Train Builder:

A-FRAME

aframe.io

The official A-Frame site includes documentation, community links and plenty of examples.

VUE.JS

vuejs.org

The official Vue.js site offers a guide to getting started, plus examples and links to further resources.

MDN TUTORIAL

netm.ag/moz-291

A tutorial on the Mozilla Developer Network that shows you how to build a basic A-Frame demo.

MOZILLA HACKS

netm.ag/mozhacks-291

A small dungeon crawler game built in A-Frame, which showed us what was possible with this framework.

RELATIVE POSITIONING IN A-FRAME

netm.ag/positioning-291

A handy guide by Casper Fabricus to help with positioning elements in A-Frame. This came in really useful when creating a complex collection of rooms with many elements in each.

A-INVADERS

github.com/dmarcos/a-invaders

A simple Space Invaders-style game by Diego Marcos, which includes collision detection for A-Frame.

SCOTCH.IO

netm.ag/scotch-291

Build a simple bulletin board in this Vue.js demo.

5 PRACTICAL EXAMPLES

netm.ag/learn-vue-291

Five example code snippets to help you learn Vue.js.

- we have an identifiable root DOM element, and doing something like this:

```
var app = new Vue({ el: '#root' });
```

Now let's create our monster component with the following code:

```
Vue.component('monster', {
  template: '#monster_template',
  props: ['type', 'position', 'rotation', 'animation']
});
```

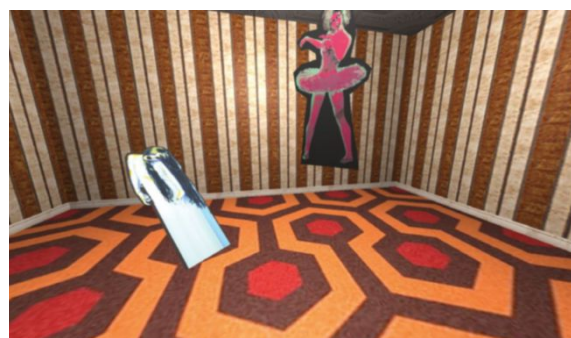
First, this specifies the name we'll use to identify this component in the markup (`<monster/>`). The props are names of attributes that can be passed into the component and will then be available in our template (e.g. `<monster position="" rotation="" animation="popup"/>`).

The template could be an actual string of the template content, but since ours is going to be quite lengthy, we'll give it an ID of a script block where we'll specify our template instead.

We'll create our template for the component, taking the existing monster markup as a starting point, then adding Vue's `v-bind` directive to inject the values of props:

```
<script id="monster_template" type="x-template">
  <a-entity v-bind:position="position"
    v-bind:rotation="rotation">
    <a-obj-model v-bind:src="'#' + type + '-obj'"
      v-bind:mtl="'#' + type + '-mtl'" collidable="8" visible="false"
      rotation="-90 0 0"></a-obj-model>
  </a-entity>
</script>
```

Now let's build out some logic to apply different types of animation within an `a-obj-model` element. We can do this with the `v-if` directive, which does what it sounds like: if the logic in that attribute



Monster mayhem Our custom monster component allows us to easily add multiple monsters with different animations

evaluates as `true` then the node will get rendered; if not then it just won't appear:

```
<a-animation v-if="animation === 'popup'"
  attribute="rotation" from="-90 0 0" to="0 0 0" delay="500"
  dur="2000" fill="both" repeat="-1" easing="ease-out-bounce">/a-animation>

<a-animation v-if="animation === 'dropdown'"
  attribute="position" from="0 10 0" to="0 0 0" dur="2000"
  fill="both" repeat="-1" easing="ease-out-bounce">/a-animation>
```

We can duplicate this logic for different animation types. In step 4 of the repo you'll find we've replaced our original A-Frame monster markup with our custom component. Note that all of the A-Frame markup has been moved into a component as well – this is an important step as it prevents the A-Frame code from triggering too early and confusing things with Vue. Try duplicating this monster a few times with different attributes to get a feel for how easy this component makes it us to reuse things.

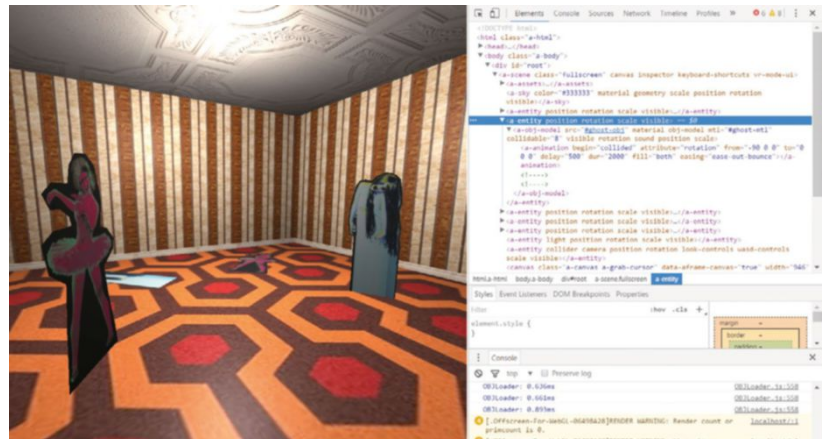
ADDING COLLISION DETECTION

We now have a room of repeatedly flipping monsters. Let's make things more interesting by hiding those monsters until the user moves near them. For this, we'll use collision detection. The bad news is that A-Frame doesn't come with this built in. The good news is that by exposing the underlying three.js API, extending A-Frame to achieve this sort of thing is nice and straightforward.

If you look at step 5, you'll see we have created a simple A-Frame extension. The `init` function runs once when the scene is first loaded. This is where we identify anything to detect colliding with, by looking for the `collidable` DOM attribute that we're going to add shortly.

Note that we're querying the contents of the scene just as we would a web page. Using the tick function (which is called each time the scene is rendered), we can access the `object3D` element of these collidable pieces, which is the underlying three.js model. We can use this to measure the distance between the object and our `collider` element (the camera), and if that distance is less than a certain threshold we can announce that these elements have collided by triggering an event.

Now let's activate this new functionality by editing our A-Frame markup to add the `collider` attribute to our camera element (representing the user) and `collidable` to anything we want to detect it bumping into (in this case, our monsters). Since all the monsters are now being constructed by



the same component, we only need to make this change in one place.

Let's hook up a response to our collision event by making some changes to our monster component:

```
<a-entity v-bind:position="position"
  v-bind:rotation="rotation">
  <a-obj-model v-bind:src="'#' + type + '-obj'"
    v-bind:mtl="'#' + type + '-mtl'" collidable="8" visible="false"
    rotation="-90 0 0" sound="src: url(cackle.mp3); on:collided;
    loop: false; volume: 0.6;">
    <a-animation v-if="animation === 'popup'"
      begin="collided" attribute="rotation" from="-90 0 0" to="0
      0 0" delay="500" dur="2000" fill="both" easing="ease-out-bounce">/a-animation>
  </a-obj-model>
</a-entity>
```

First we lay the monsters down flat (using `rotation`), then change the animation so it only plays once – when triggered by the `collided` event. We've also taken this opportunity to make the monster play a sound, triggered by the same event.

END OF THE LINE

Now we have a spooky room our users can walk around, with popup monsters, and you hopefully have a feel for what is possible when you combine A-Frame and Vue. The room is a little bland and the user can walk through walls, so there's plenty of room for improvement. For example, we might add animated lighting effects, control the monster placement from an array using the `v-for` directive, or make the camera move on rails.

Once your scenes starting getting more complex, you may notice performance becomes an issue and you'll have to look at hiding/showing elements on demand. Hopefully you've been inspired to make something funky of your own! 🎮

Tweak time We can explore and modify the elements of the 3D scene using our existing dev tools

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* FONTS

CSS FONT LOADING

Bram Stein on how this new API makes it easy to load and manipulate web fonts

> Web fonts seem easy to use. But perhaps you want to load fonts asynchronously, preload them, or get a notification when loading completes. In the past, you would use a JavaScript web font loading library for these tasks. Fortunately, you can now use the new CSS font loading API, which makes it easy to load and manipulate web fonts using JavaScript. It's officially still a W3C working draft, but Firefox, Chrome, Opera and Safari already support it.

API MAKEUP

The API consists of two parts: the `FontFace` constructor (used to create new `@font-face` rules), and the `document.fonts` interface (used to manipulate fonts on the page). The `FontFace` constructor takes three parameters. The first is the font family name. The second is a list of font URLs and uses the same syntax as the `src` descriptor in `@font-face` rules. The third (optional) parameter is an object describing the web font, such as its weight or style.

```
var elena = new FontFace('Elena', 'url(elena.woff2)
format("woff2"), url(elena.woff) format("woff")), {
  weight: '300',
  style: 'normal'
});
```

The constructor creates a new `FontFace` instance, with a `load` method and several properties that describe the web font (such as `family`, `weight` and `style`). Calling `load` returns a promise that resolves when the font loads, or rejects when it fails to load.

```
elena.load().then(function () {
  console.log('Elena has loaded');
});
```

However, calling `load` does not make the font show up on the page automatically; it just loads the font. To display the font, you call the `add` method on `document.fonts` with your `FontFace` instance. Adding the font makes it available to the page as if it were a regular `@font-face` rule in CSS.

```
elena.load().then(function () {
  document.fonts.add(elena);
});
```

The two-stage loading process may seem odd at first, but it is quite useful as it allows you to make sure the font is available before using it. You can use this to prevent the browser from hiding text while the font is loading, or to perform some action after the font loads.

Sometimes, it is preferable to know when all fonts on the page load, rather than one specific font. The `document.fonts` interface provides a high-level loading event for this purpose.

The `ready` method returns a promise that resolves when all the fonts necessary to display the text on the page load.

```
document.fonts.ready().then(function () {
  console.log('All web fonts are loaded');
});
```

The CSS font loading API is a great improvement. It gives you precise control over font loading and font events, something that was previously very complex. Hopefully, the API will be implemented in all browsers soon, so font loading JavaScript libraries can become a thing of the past. ■

* PROFILE

Bram (bramstein.com) is a web developer working at Adobe Typekit. He is the creator of Font Face Observer and several other tools for improving web typography



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w: www.kezzbracey.com

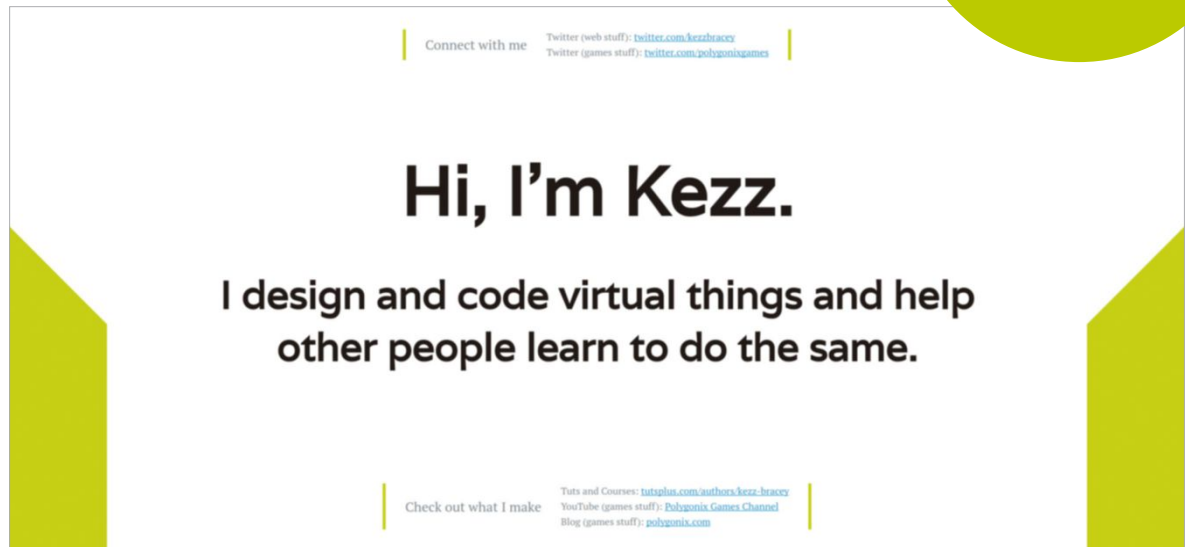
t: @kezzbracey

job: Coder and designer

areas of expertise: CMSs, web and game development

q: what has made you smile this month?

a: Switching to Linux and discovering the addictiveness of distro-hopping



* CMSs

BUILD A BESPOKE HOMEPAGE WITH CRAFT

With Craft, you can create exactly the backend you want. **Kezz Bracey** talks you through how to build a landing page with this popular CMS

> Craft CMS is an incredibly flexible website management platform that allows you to create a custom backend for almost any type of site. In this tutorial, I'll walk you through its essentials as we convert a simple, one-page personal template into a Craft CMS-driven site (pictured above).

To follow along, you'll need an installation of Craft to work on, ideally running locally on your computer via XAMPP/MAMP or Vagrant:

- **Vagrant Craft CMS box:** netm.ag/vagrant-291
- **Craft CMS installation docs:** netm.ag/install-291

TEMPLATING ESSENTIALS

Rather than using themes, every individual Craft website is built to requirement, driven by template files employing the excellent Twig templating language. Templates can be written as you would if you were producing static HTML, then made dynamic by dropping in the appropriate Craft template tags.

In the Craft installation you set up for this tutorial, browse to the 'Craft > Templates' directory. To keep things simple, we're going to be working only with the index.html file you'll find there. Delete the other files and subdirectories, then open up index.html for editing.

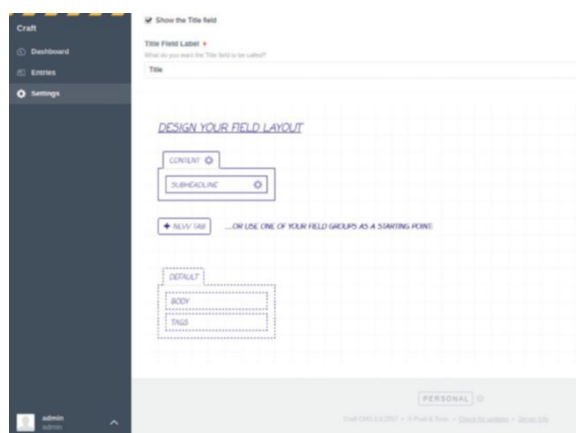
GET STARTED

A starter index.html template with all the required HTML and CSS for your website can be found in the GitHub repo at netm.ag/craftgit-291. Replace the default content of this template with the code from the starter template, then save it and take a look at the frontend of your Craft site. You should see the basic design of the personal page in place, ready for you to add dynamic content. Note: the template incorporates CSS variables, so you'll need to use a browser that supports them (i.e. any major non-Microsoft browser).

Let's go ahead and add some Craft-powered content to your index.html template. In your

RESOURCE

The colour controls created in this tutorial are homepage-specific. Try making them available site-wide instead using Craft Globals: craftcms.com/docs/globals



UI layout Craft allows you to drag and drop fields, laying out the user admin UI however you prefer

admin Entries area, you'll find there's already an entry named 'Welcome to Craft' (or similar) under the section type 'Homepage'. We'll be customising this entry, integrating its content into the index.html template, and using it to control our entire homepage.

ADD HEADLINE AND SUBHEADLINE

The Homepage entry already has a title, which can be displayed in a template via the tag `{{entry.title}}`. Let's add it to the index.html template as a headline by locating the code `<h1><!-- Main headline --></h1>` and replacing it with `<h1>{{entry.title}}</h1>`. Check your site's frontend now and you should see the headline displayed.

Now let's add a subheadline beneath the main headline. To do this, we'll need to add a new field that can be edited in the Homepage entry. In the admin area, go to 'Settings > Fields' then click the 'New field' button. Fill in the Name field with the value 'Subheadline'. This should automatically fill the Handle field with the value 'subheadline'. Leave the Field Type set to 'Plain Text', everything else at default, and click Save.

Next, go to 'Settings > Sections' and to the right of the section entitled Homepage, click 'Edit entry type'. Towards the bottom, you'll see your new SUBHEADLINE field surrounded by a dotted outline. Drag and drop it onto the area above it labelled CONTENT. This adds your new field into the UI for the Homepage entry type. While you're at it, you can remove the BODY field, as you won't be needing it for this tutorial. Then save.

Go to Entries, edit the Homepage entry, and you should see your Subheading field is available. Fill this in with a brief sentence describing yourself. You may wish to edit the Title field while you're at it. To integrate the subheadline into the index.html



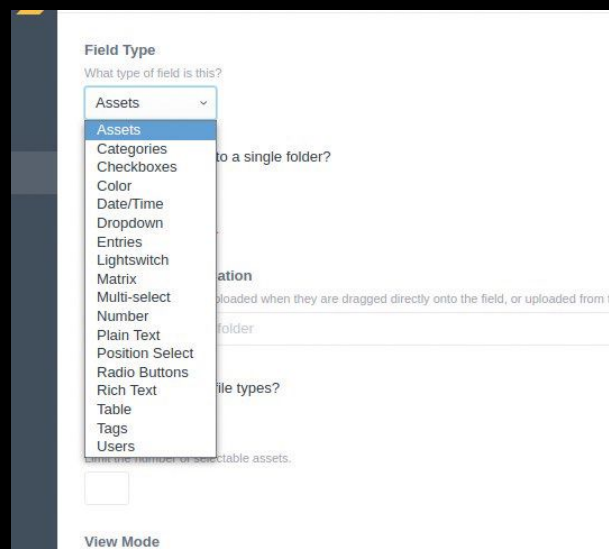
★ FOCUS ON

CRAFT CMS FIELD TYPES

+ In this tutorial we've utilised the Plain Text, Matrix and Color field types. However, there are 18 fields to choose from in total: Assets, Categories, Checkboxes, Color, Date/Time, Dropdown, Entries, Lightswitch, Matrix, Multi-select, Number, Plain Text, Position Select, Radio Buttons, Rich Text, Table, Tags and Users.

This large range of field types is a big part of what makes Craft so powerful. For example, you could use the Entries field type to select a series of entries to associate with a parent entry, and have it drive a portfolio page with entries dedicated to each piece of work. Or you could use the Rich Text field type to give users a full, Word-style, posting interface with formatting tools and image insertion.

In a nutshell, if there is an admin control you want to provide to an end user, there's a way you can create it using Craft's collection of field types.



Field types The wide range of field types available in the Craft CMS provide you with a massive amount of flexibility

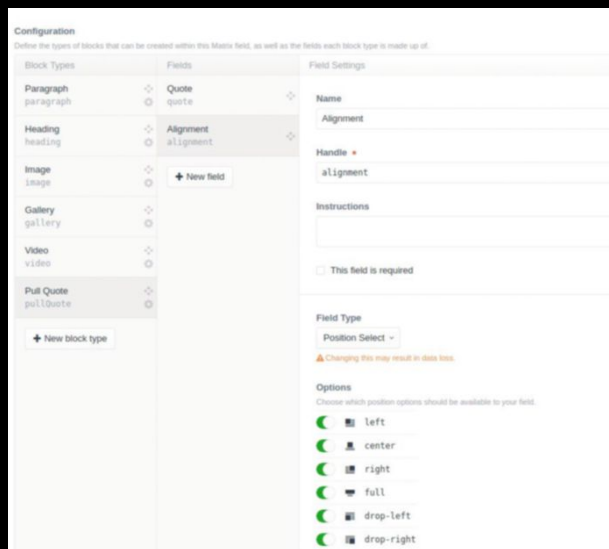
* IN-DEPTH

THE POWER OF
MATRIX FIELDS

+ In this tutorial, you created two Matrix Fields to generate links, and through that you saw how multiple sub-fields can be nested under parent Blocks. Matrix fields, when combined with Craft's wide range of other field types, are incredibly powerful. With the right Matrix Field setup, users can even art-direct their own articles.

With a single Matrix Field, you can enable users to insert blocks representing paragraphs, headings, aligned images, galleries, videos, pull quotes and essentially anything you can think of. They can add as many blocks as they require, then drag and drop them to change their order.

All you need to do is create a block in your Matrix Field for each type of content you wish to offer, add sub-fields for the elements comprising that content, then use a Twig `{% switch %}` statement in your template to output the appropriate code for each block type.



Page builders With just one Matrix Field, you can create a page builder capable of allowing user-driven art direction

- template, find the code `<h2><!-- Sub headline --></h2>` and replace it with `<h2>{{entry.subheadline}}</h2>`.

ADD SOCIAL LINKS

The homepage is going to have two sections of social links: links at the top to enable visitors to connect with you, and links at the bottom to connect them with the things you've made. To generate these links, we're going to use Craft's Matrix field type, which allows you to nest multiple sub-fields inside parent Blocks.

Go to 'Settings > Fields', create a new field, set its Name to 'Connect' and its Field Type to 'Matrix'. This will make a new area appear at the bottom of the page, where you can set up your Blocks and sub-fields. Click the 'New block type' button. In the pop-up box that appears, set the Name to 'Connect Link', then click the 'Create' button.

You should now see a column labelled 'Field Settings' to the right of your new block. Set the Name to 'Link Label' and leave all other fields at their default. Now in the column labelled 'Fields', click the 'New Field' button, and set this second field's Name to 'Link URL'. Then add one more field and give it the name 'Link Text'. Click Save.

Now go back into 'Settings > Sections', click 'Edit entry type' (next to Homepage), and drag-and-drop your new CONNECT field into the field layout. You're now ready to add some links to your homepage.

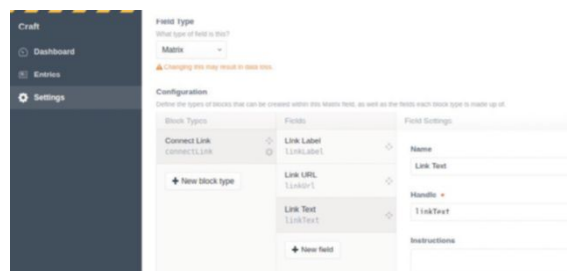
Go to Entries and edit your homepage. You should see a button reading 'Connect Link +'. Click it, then fill in each of the sub-fields. For example:

- **Label:** Twitter
- **URL:** <https://twitter.com/kezzbracey>
- **Text:** twitter.com/kezzbracey

When you're done, hit the 'Connect Link +' button again to add extra links. To integrate your links into your template, locate the following code:

```
<!-- Connect block -->
```

```
<div>
```



Block combos Create powerful, in-depth content creation UIs by combining multiple sub-fields under parent 'Blocks'

```

<!-- Connect link label -->
<a href="<!-- Connect link href -->" class="a" target="_
blank"><!-- Connect link text --></a>
</div>
<!-- / Connect block -->

```

And replace it with this:

```

{% for block in entry.connect %}
<div>
  {{block.linkLabel}}:
  <a target="_blank" href="{{block.linkUrl}}">{{block.
linkText}}</a>
</div>
{% endfor %}

```

Refresh your frontend and you should now see your connect links in place. Repeat all this for the 'Make links' section at the bottom.

Now create a new Matrix field named 'Make', set up a block named 'Make Link', and add the same three sub-fields you used in your 'Connect Link' block. Then go to 'Settings > Sections' and add the 'MAKE' field to your Homepage entry type.

Next, edit your Homepage entry and add some new Make links in the same way that you added the connect links earlier. To integrate these links

Templates can be written as you would if producing static HTML, then made dynamic

into your template, locate the section wrapped with the comments `<!-- Make block -->` and `<!-- / Make block -->`, then replace it with the same template code you used above. The only thing you need to change is the opening line to: `{% for block in entry.make %}`.

ADD CUSTOM COLOR CONTROLS

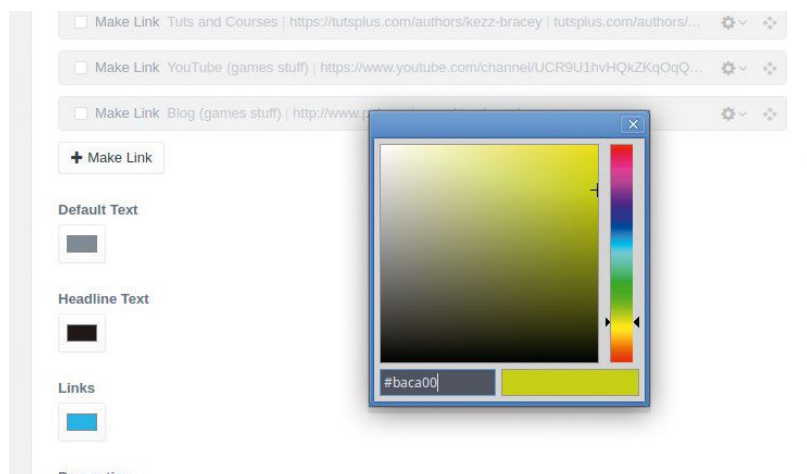
Now let's add some controls for the colours of the homepage. Go back to 'Settings > Fields' and add four new fields, each with their Field type set to 'Color'. Name them Default Text, Headline Text, Links and Decorative. Then go to 'Settings > Sections' again, and add all four fields to your Homepage entry type's field layout.

In your index.html file, find the `<style>` tags near the top and locate this CSS:

```

:root {
  --col_default_text: #8f8f8f;

```



```

--col_headline_text: #333;
--col_links: #d97a23;
--col_decorative: #d5d5d5;
}

```

Color controls The 'Color' field type allows you to give end users full control over style and presentation

Replace it with:

```

:root {
  --col_default_text: {{entry.defaultText}};
  --col_headline_text: {{entry.headlineText}};
  --col_links: {{entry.links}};
  --col_decorative: {{entry.decorative}};
}


```

Finally, head back into your homepage entry and you should see four colour pickers. Use these to set the colours you'd like to use for your website:

- **Default text:** For normal text
- **Headline text:** For colours of the headline and subheadline
- **Links:** For the links
- **Decorative:** For the decorative shapes on the page

CONCLUSION

In this brief introduction to the Craft CMS, you've seen how quickly you can use it to set up a custom backend with the exact fields you want, laid out in the admin UI and coded into your template exactly how you please.

This is just skimming the surface of what Craft is capable of, however. So head over to the docs and have a thorough read through to discover what can be achieved when using all the features available to you, such as the various section types, field types, global settings, assets, categories and tags, to name but a few. Visit www.craftcms.com and www.craftcms.com/docs to learn more. 



ABOUT THE AUTHOR

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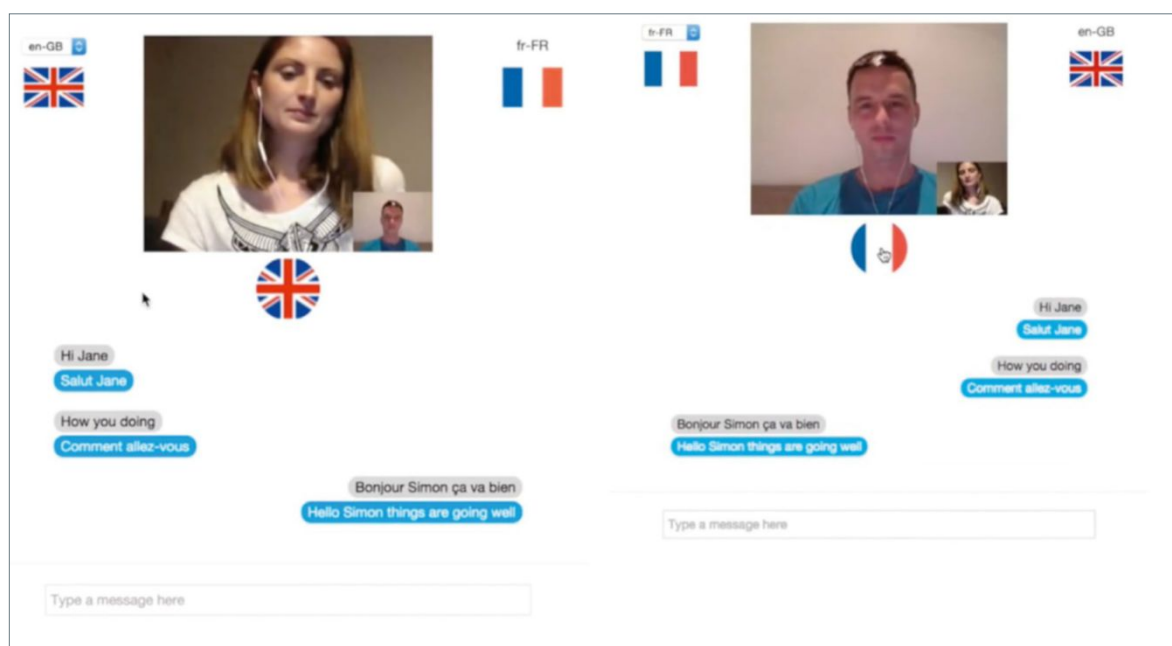
job: Web developer

areas of expertise:

HTML, JavaScript,
jQuery

**q: what has made you
smile this month?**

a: My ex-colleagues
at Digital Detox on my
leaving do



* AI

INTRODUCING THE WEB SPEECH API

The Web Speech API can enable your web pages to listen and talk to your users. **Aurelio De Rosa** shows you how

BROWSER SUPPORT SPEECH SYNTHESIS

Desktop	Mobile/tablet
33	33
7	7.1
27	-
14	-
49	

> Artificial intelligence is changing the way we interact with the world. Self-driving cars, AlphaGo and Amazon Echo are just a few examples of what we've been able to achieve in the last few years. Recently, even Mark Zuckerberg, creator of Facebook, has shown his interest in learning more about AI (see netm.ag/jarvis-291). AI software is not just fascinating, but it becomes even more attractive when we can use our voice to interact with it.

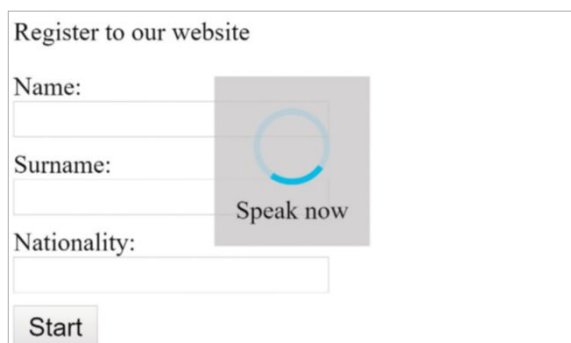
Traditionally, we've interacted with software via a mouse or a keyboard. Nowadays the trend is shifting towards the use of natural language. When dealing with natural language, there are two different, yet complementary, aspects to consider: automatic speech recognition (ASR) and text-to-speech (TTS). The former transforms speech into text, while the latter turns text into speech. Together they are the key to bringing

interaction with machines closer to those we have with other human beings. If we combine these systems with web technologies, we open a whole new world of scenarios.

Thanks to ASR and TTS systems, you can program a web application to be navigated by talking to it out loud. Or you could allow users to verbally answer questions posed by a web page to populate a form. Users might also interact with their web email client so that the latter reads their emails. Or what about a navigator that is 100 per cent web-based and gives directions via speech synthesis? All of these examples can be implemented today thanks to the Web Speech API.

WEB SPEECH API

The Web Speech API (netm.ag/speech-api-291) was introduced at the end of 2012. It defines two main interfaces: `SpeechRecognition` and `SpeechSynthesis`.



Register to our website

Name:

Surname:

Nationality:

Start

Speak now

Voice form A web page that asks the user questions to fill a form via voice

These are used for speech recognition and speech synthesis respectively.

A web page must be granted permission before it's allowed to access a user's microphone. However, it is possible to prompt a synthesised text without any permission. Lately, you might have experienced this situation with some annoying ads that started playing artificial speech against your will. Although

The trend is shifting towards interacting with software by using natural speech

not (yet) mandatory, I strongly suggest you use this API on HTTPS for reasons of privacy and security.

The Web Speech API defines many properties, methods and events that you can use to customise text prompts and recognition. I won't cover all of them in this article, but I'll give you enough information to get started.

SPEECH SYNTHESIS

For the synthesis, you'll deal with two interfaces:

`SpeechSynthesis` and `SpeechSynthesisUtterance`.

`SpeechSynthesis` is used to start (`speak()`), stop (`cancel()`), pause (`pause()`) and resume (`resume()`) a prompt. This interface is exposed via a `speechSynthesis` object on `window`.

`SpeechSynthesisUtterance` defines properties that allow you to customise the prompted text. For example, you can change the rate (`rate`) at which the text is prompted, its volume (`volume`), and the voice used (`voice`). The voices available are browser-dependent. If you don't set a voice, the browser will employ a default one. In such cases,

★ FOCUS ON

IMPROVING SPEECH RECOGNITION

+ The accuracy of speech recognition depends on many factors, including the surrounding environment, the user's accent, the microphone and the recognition software. The results obtained are not always satisfying. Your voice-driven application might rely on some specific commands being spoken and it will fail if the accuracy of the recognition is poor.

For example, imagine that your user said 'send email' but the recognition gives you 'sand gmail' as the best guess. You might program your application to ask the user to repeat the command. However, the recognition might fail again. You don't want to cause frustration, so you need an alternative solution.

The ideal solution is to use a grammar. A grammar allows you to define a set of words that are allowed in the context of your application. By using it, you can improve the percentage of success of your application. Unfortunately, they aren't supported by any browser as of yet.

Another approach that isn't perfect but that you can use today is to employ the Levenshtein distance. This is a measure of the similarity between two strings, based on the number of deletions, insertions or substitutions required to transform the first string into the second. An example of this in use is shown below.

```
var recognizedText = 'sand gmail';
var commands = ['send message', 'send email', 'call'];
var recognizedCommand = [-1, Infinity];
for (var i = 0; i < commands.length; i++) {
  var distance = levenshtein(commands[i], recognizedText);
  if (distance < recognizedCommand[1]) {
    recognizedCommand = [i, distance];
  }
}
```

This example (netm.ag/speech-291) uses a `levenshtein()` function you can write on your own or find on GitHub or npm. Depending on your use case, you might also want to use other metrics, such as the Damerau-Levenshtein distance.

★ IN-DEPTH

FURTHER LEARNING

+ The Web Speech API has more to offer than just what I discuss in this article. Here is a list of resources I recommend exploring if you want to go further.

Experimenting with the Web Speech API

netm.ag/experiment-291

An article I've written that shows how to create an interactive form that can ask questions to the user and can be filled by using the voice.

Using the Web Speech API to simulate CSS Speech support

netm.ag/simulate-291

Léonie Watson explains how to use the Web Speech API to demonstrate how the CSS Speech properties might work.

Firefox and the Web Speech API

netm.ag/firefox-291

Chris Mills covers the Web Speech API and how to improve the recognition using the JSpeech Grammar Format (JSGF) in Firefox.

Talking and listening to web pages

netm.ag/talk-291

My in-depth talk about the Web Speech API for jsDay 2015.

WebRTC Translator demo

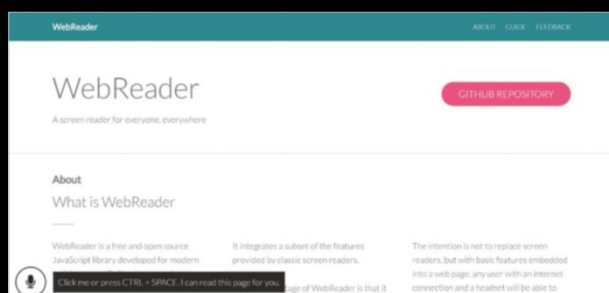
netm.ag/demo-291

An experimental app by Szymon Nowak, which uses the WebRTC API and the Web Speech API to provide real-time translations during a video call.

WebReader

netm.ag/reader-291

An experimental JavaScript library I've developed that uses the Web Speech API to enable some of the features of a screen reader on a web page.



- you can specify the language to use via the `lang` property. This interface also defines events that you can employ to perform tasks when the status of the prompted text changes. `start`, `end`, `pause`, `resume` and `error` are some of them.

Before you start prompting messages to the user, you have to detect if the browser supports the feature.

```
if ('speechSynthesis' in window) {
  // Feature supported!
}
```

Then you can prompt a text:

```
var utterance = new SpeechSynthesisUtterance('Hello world!');
utterance.rate = 0.5;
utterance.volume = 0.8;
utterance.addEventListener('end', function() {
  console.log('Message prompted');
});
speechSynthesis.speak(utterance);
```

The code above (netm.ag/hello-291) prompts the text 'Hello world!' at half the default speed (line 2) and at 80 per cent of the volume (line 3). It also logs 'Message prompted' on the console

Browsers usually offer several voices, but some of them may be loaded asynchronously

when the prompt is completed (lines 4-6). The call to the `speak()` method actually prompts the text (line 7).

Lines 1 and 7 represent the minimum code required. The other ones have been used to demonstrate how you can customise the prompt and show that you can listen for events.

SYNTHESIS IN OTHER LANGUAGES

Browsers usually offer several voices, but some of them may be loaded asynchronously. When voices are added or removed, the `voiceschanged` event is fired on the `speechSynthesis` object. You can listen for this event to set a different voice in your application.

The list of voices available can be obtained by calling the `getVoices()` method. They can be used by assigning a voice to the `voice` property of a `SpeechSynthesisUtterance` instance.

```
var voices = speechSynthesis.getVoices();
utterance.voice = voices[voices.length - 1];
```

In this example, I'm selecting as a voice the last in the set of voices available. Each voice has several properties, the most important being: `name` (a human-readable name that represents the voice), `lang` (representing its language) and `default` (specifying if the voice is the default one).

SPEECH RECOGNITION

The most important interface defined in the recognition part is `SpeechRecognition`. Before using it, you need to detect for its support. This interface is vendor-prefixed in Chrome, so the code is slightly more complex than the one for the synthesis.

```
window.SpeechRecognition = window.SpeechRecognition ||
  window.webkitSpeechRecognition ||
  null;

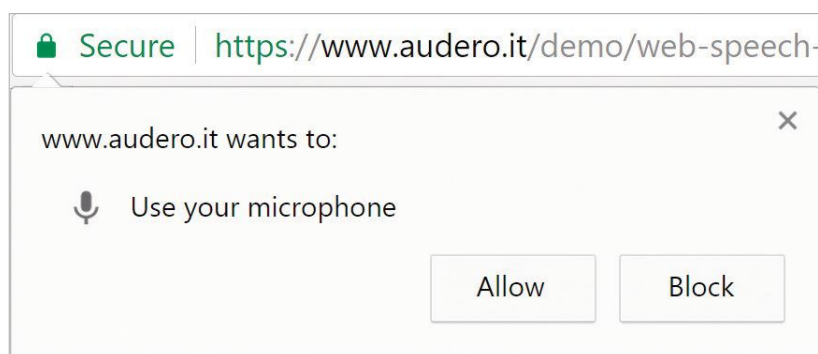
if (window.SpeechRecognition) {
  // Feature supported!
}
```

You can create a new recogniser by using `SpeechRecognition()`. Once created, the recogniser object can be used to start (`start()`) and stop (`stop()`) or abort (`abort()`) a recognition. The difference between the latter two is that `abort()` also discards any result calculated up to that point.

A recogniser can run in two modes: one-shot or continuous. In the first mode, the interaction ends when the user stops talking, while in the second it ends when the `stop()` method is called. In the second case you can still allow a user to end the interaction by attaching an event listener that calls the `stop()` method to an element (e.g. a button). The results of the recognition are provided as a list of hypotheses, along with other relevant information for each hypothesis.

The recognition can be customised in a number of ways. You can specify the language of the user (`lang`), the mode (`continuous`), how many hypotheses are needed (`maxAlternatives`), and if you want the hypotheses to be returned only at the end of the interaction (`interimResults`).

Finally, `SpeechRecognition` defines several events, the most important of which is `result`. You can use it to process the hypotheses when they are returned. Other commonly used events are `start` and `end`, fired at the very beginning and at the very end of the interaction, and `speechstart` and `speechend`, fired when the speech of the user starts and ends respectively.



```
var recognizer = new webkitSpeechRecognition();
recognizer.lang = 'it-IT';
recognizer.maxAlternatives = 5;
recognizer.interimResults = false;
recognizer.addEventListener('result', function(event) {
  console.log(event.results[0][0].transcript);
});
recognizer.start();
```

Permission required
Chrome asks for permission to acquire the audio from the microphone of a user

This example (netm.ag/example-291) shows how to create a recogniser (line 1) that should recognise a speech in Italian (line 2). The recogniser should return five hypotheses (line 3) and provide the results only at the end of the interaction (line 4). When the results are returned, the text of the best guess is printed on the console (lines 5-7). Finally, the recognition is started (line 8).

BROWSER SUPPORT

Currently, support for the Web Speech API is excellent for the synthesis but poor for the recognition (see widgets in the sidebars for more information). The former is supported by every major browser, including Microsoft Edge (although not Internet Explorer). The latter is only supported by Chrome but it's under development in Firefox, Edge and Opera. If you want to keep an eye on how support evolves for the Web Speech API, refer to CanIUse (netm.ag/support-291).

Please note that the implementation of some browsers has bugs. So before blaming yourself if something isn't working properly, search on the web for known issues.

THE START OF A JOURNEY

The Web Speech API opens up new interactions on the web and can improve user experience, especially for those with disabilities. Overall, the support is good and should become excellent in the next few months. The potential of this API is incredible, so keep an eye on its evolution and start experimenting with it today. **n**

BROWSER SUPPORT SPEECH RECOGNITION

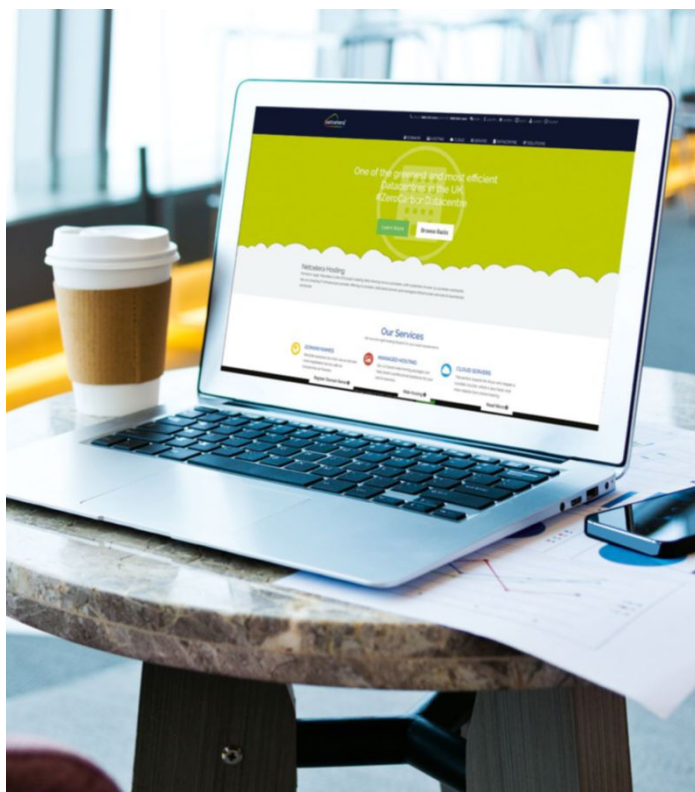
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CLOUD TECH TIP ...

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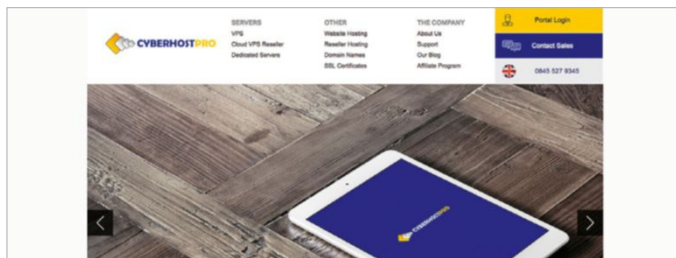
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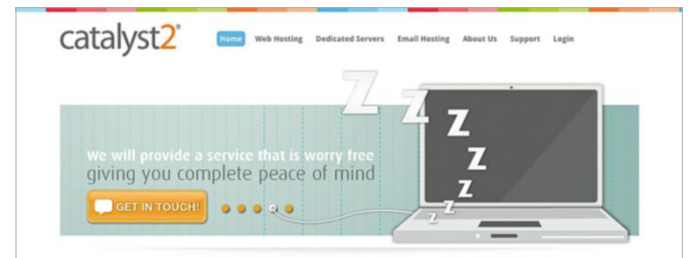
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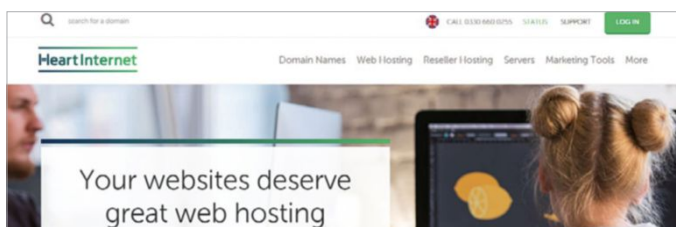
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* ACCESSIBILITY

AUTISM

Karwai Pun explains how you can make your designs more accessible for people on the autistic spectrum

> Autism spectrum disorder (ASD) is a neurodevelopmental condition that affects the brain's ability to receive and process information. Last year I created a poster outlining the dos and don'ts of designing for autistic users: netm.ag/autism-291. Here are the key rules.

Do keep colours soft

Opt for simple, soft colours as opposed to bright, highly contrasting ones. Users with ASD may be more sensitive to things like colours, which can cause distress, anxiety or confusion.

Don't use figures of speech

Write in clear, plain English and cut out figures of speech. This isn't a reflection of the user's intellect, which can be highly advanced. Rather, it's the preoccupation with small details of the structural language that makes figurative speech harder to understand and thus be taken literally.

Do break up text

Other design principles to follow include using simple sentences and bullet points to allow people with ASD to scan content more easily. Avoid creating walls of text as this can be overwhelming and cause


cognitive problems. An autistic user would find it hard to filter out the important bits.

Don't overcomplicate things

Simple and consistent layouts help reduce clutter and allow information to be processed more easily. Make buttons descriptive (e.g. 'Attach files') so users have control over what to expect. Vague button actions (e.g. 'Click here') are unpredictable and may cause unease.

Do test with users

There are some areas where the design advice here may contradict that given for other conditions. For example, using bright, contrasting colours may actually work better for people with poor vision. The 'dos' and 'don'ts' are not hard and fast rules, but should only be taken as general guidance. When designing sites and services, you should always test with various users to get the right balance.

The design principles listed in the poster are not meant exclusively for users on the autism spectrum. By highlighting the autistic user, the poster aims to raise awareness of the condition. Good, accessible design applies to everyone. 

PROFILE
*

Karwai (@krwpn) is an interaction designer at the Home Office, working on making digital public services more accessible

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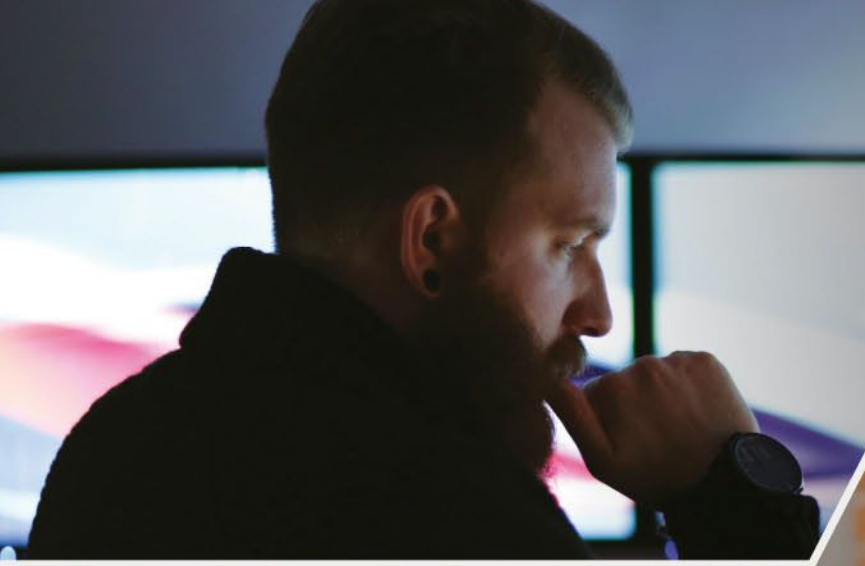
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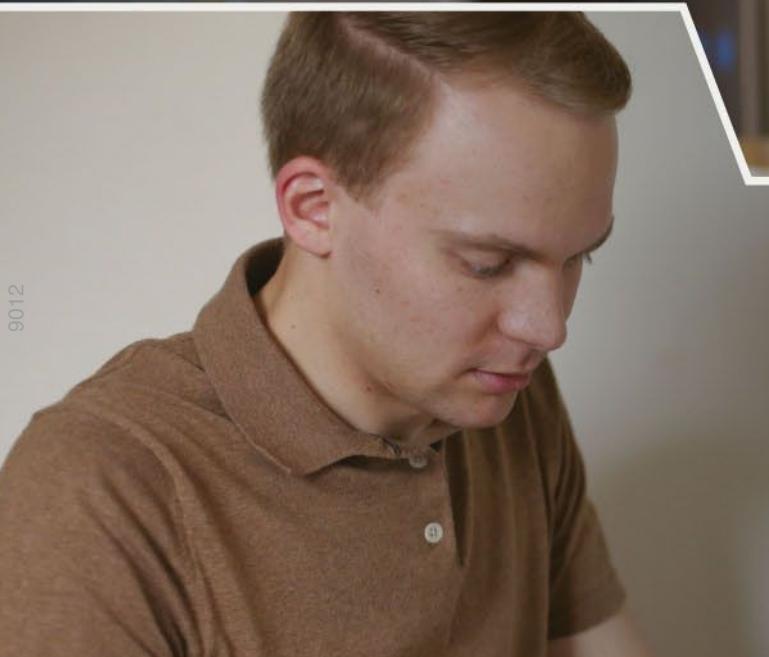
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