

The voice of **web design**

net

Issue 302 : February 2018 : net.creativebloq.com

*FEATURE

PROTOTYPING AT NETFLIX

How the entertainment giant builds interfaces used by millions every day

50

AMAZING DEV TOOLS

2018

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Future

ISSUE 302

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★ WELCOME

EDITOR'S NOTE

> 2018 is upon us already, and this bumper issue of **net** looks ahead at the next 12 months to help prepare – and inspire – you in equal measure.

Our cover feature gets you up to speed with what's hot and new in developer tools, rounding up a variety of ground-breaking finds from the web community. Louis Lazaris, curator of the Web Tools Weekly newsletter, is the man in charge.

Discover the very best HTML, CSS and JavaScript tools, as well as the libraries and frameworks you need right now. Throw in the finest coding and testing tools, and there's guaranteed to be something in our 50 Amazing Dev Tools 2018 list that helps solve your biggest developer problems.

Our second feature goes inside Netflix HQ to discover how it prototypes some of the most used entertainment services in the world. You might be surprised with how it selects user interfaces – data is everything, and personal opinion counts for nothing. David Aragon's guide is a real eye-opener, and we're delighted to bring it to you this issue.

We've also teamed up with our friends at Wix to bring you a special 20-page Design Trends supplement. What's going to be big in 2018? It's the million dollar question. We've done the research and given you a head-start. It's time to brush up on your flat design, animation, data viz and typography.

Enjoy the issue, and happy New Year!

FEATURED AUTHORS

LOUIS LAZARIS



Which dev tools should you be using in 2018? Louis, the owner of Impressive Webs and curator of the Web Tools Weekly newsletter, reveals all on page 60.

w: impressivewebs.com
t: @ImpressiveWebs

DAVID ARAGON



Inspired by his Generate London talk in 2017, David expands on his role as a prototyper at Netflix to tell us how the entertainment giant picks the UI designs that millions use every day. Head to page 68 right now!

t: @davidmaragon

AGA NAPLOCHA



Creator of The Awwesomes and front-end designer at Adobe, Aga runs down her favourite sites of the month on page 40, including a standout site from Anton & Irene.

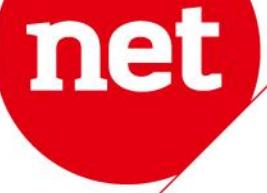
w: aganaplocha.com
t: @aganaplocha

MARK ROBBINS



Email guru Mark shows us some of the main issues with accessibility in HTML emails and, more importantly, how to fix them on page 82.

w: www.rebelmail.com
t: @M_J_Robbins



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Join us on January 31st in London for the Vibrant Digital Future summit, where you'll find more than thirty speakers across three tracks who are there to help you take real, practical steps to prepare for the oncoming storm and plan for clearer skies.



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Love

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EXCHANGE

Send your questions to netmag@futurenet.com

Practical
advice from
industry experts

THIS MONTH FEATURING...

LILY DART



Lily is design director at the UK's Department for International Trade. She specialises in designing a clear and informed strategy for services and digital products.

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t: @lily_dart

NADIEH BREMER



Nadieh is a freelance data visualisation designer and artist. Her projects include both web-based, interactive visualisations, frequently using storytelling techniques to show insights into complex data.

w: visualcinnamon.com
t: @NadiehBremer

★ QUESTION OF THE MONTH

What would you recommend to someone trying to learn how to create data visualisations?

Riley Wilson, San Diego



Resource hungry To get started with dataviz, check out Nadieh's site for a full list of resources

NB: Create them! Making lots of visualisations is the best way to learn about which visual shapes fit which types of data, about technical/tool skills, about colours and perception and more. Start simple – pick a chart someone else made and try to adjust/recreate it with your own data. Once that works, adjust small things such as the styling or colours, to make it your own. I think it's also good to learn more about best practices, visual perception, and get inspired by the work of other people. I did this by reading a lot of books from experts in the field, and using Twitter to follow dataviz people. I have a page with my personal favourite resources to learn about dataviz here: <https://www.visualcinnamon.com/resources/learning-data-visualization>.

DATA VISUALISATION BALANCING ACT

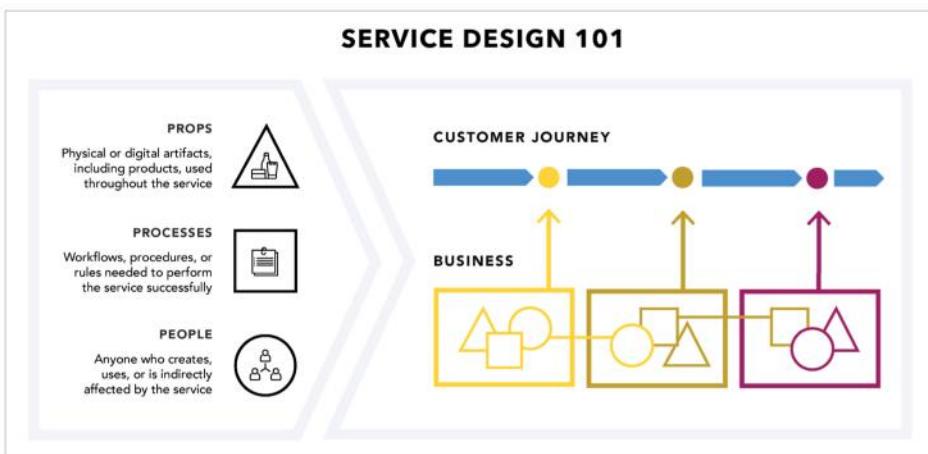
How do you balance aesthetics with information communication? Is there ever a place for reactions of 'It's beautiful, but what does it mean?'

Amelia Bellamy-Royds, Alberta, Canada

NB: Yes there is! But that reaction is more fitting for data art. Sometimes 'what does it mean' could be an initial reaction, but if the dataviz is well

structured it will entice the audience to dive in and find the (often) many layers of information to be found. Figuring out the balance depends on the audience.

Will they see the chart while on the go? If not, then try for quicker comprehension through fewer levels of context. Does it appear in a magazine or on an iPad read at home? Then giving more focus to an intriguing layout is a good way to pull in the reader.



An introduction Nielsen Norman Group provides a good introduction to service design at www.nngroup.com/articles/service-design-101

SERVICE DESIGN DESIGN FOR DIVERSITY

Where do service design and #UniversalDesign overlap?

Alan Dalton, Ireland

LD: The answer to this question is 'they overlap at every point'. My background is in public sector design, where our services must be accessible to a broad audience with sometimes wildly variable needs. This means that if you aren't designing with that range of needs in mind – like the user's literacy, their environment, and their physical abilities – then you aren't really doing user-centred design. However, I think that designers are still massively under-educated about what designing for diverse users in diverse circumstances really means. I don't believe this will change until we improve the diversity within our teams; the design industry in the UK is currently 90 per cent white and 60 per cent male.

DATA VISUALISATION MULTIPLE DATA

How would you visualise more than three data dimensions in a chart/dashboard?

Gerrit Garbereder, Vilnius, Lithuania

NB: It depends on the exact variables and the goal of the visualisation. You could have a bubble plot (position-x, position-y, colour and size) or a radial icon-like plot (position-radius, position-angle, shape and size), or width, height, colour and opacity,

parallel coordinates etc. This list can get very long. You start with figuring out what question the visualisation needs to answer. What should people learn? That will help you understand what variables in your dataset are crucial to use and what are more a 'nice-to-have'. Crucial variables get the most prominent/easy to interpret visual 'channels', such as positions. Nice-to-have variables can go into the remaining channels, such as colour shade, angle or opacity.

SERVICE DESIGN MAKING IT WORK

Do you think service design is being incorrectly placed within digital teams?

Andy Parker, Brighton, UK

LD: Absolutely. But it's more than that: service design and design in general is being incorrectly placed within organisations. The design specialism has very little value unless it can cause change. Unlike UX design, service design doesn't have clear boundaries of responsibility. Anything can, and does, affect a service user's experience. Service design can only flourish when designers can own the end-to-end journey of a service user. Too often we place service designers at junior levels, and expect them to drive progress purely through their presence. For service design to work, it must have senior sponsorship. A head of service design should own the big picture of how the whole service fits together.

3 SIMPLE STEPS

What's the best way to start learning about service design?

Dean Bradley, Wiltshire

Case studies

+ The best introductory books I've found are *This is Service Design Thinking* by Jakob Schneider and

Service Design: From Insight to Implementation by Andy Polaine, Lavrans Løvlie and Ben

Reason. They are both heavy on case studies, which really drives home the value and impact service design can offer.



Holistic approach

+ I'd also strongly recommend *The Best Service is no Service* by Bill Price & David Jaffe. This book uses a design thinking approach to improve customer services; reviewing the whole service holistically to reduce unnecessary customer contact and improve overall satisfaction. It's an excellent example of service design in practice.



ROSTOV-ON-DON

Service Design Jams

+ The best way to learn about service design is, however, trying it out. Service Design Jams are a lighthearted introduction to the field, with coaching provided by experienced service designers. They are run all over the world and admission is usually free. Visit [planet.globalservicejam.org](http://globalservicejam.org) or follow @gsjam to be informed of updates.

COOL STUFF WE LEARNED THIS MONTH

SKETCHING INTERFACES

Airbnb is developing a product that uses machine learning and its established design system to generate working prototypes instantly from hand-drawn sketches. "The time required to test an idea should be zero," says the author of this post, and this technology is close to achieving that.

<https://airbnb.design/sketching-interfaces>

DEALING WITH WIDE GAMUT DISPLAYS

So far it's been possible to get away with not understanding colour management, but things will change with the arrival of wide gamut displays – you need to do some learning to make sure your designs display correctly on these screens. This article explains what you need to know.

<https://bjango.com/articles/colourmanagementgamut>

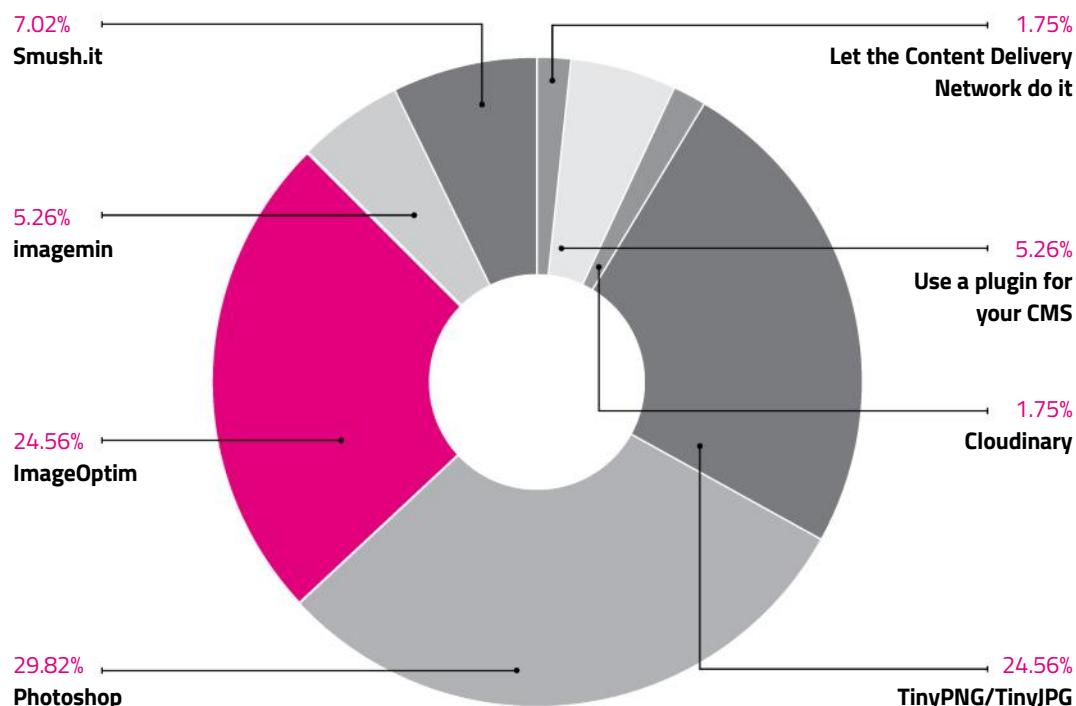
THE WEB BEGAN DYING IN 2014

André Staltz explores how web power dynamics have shifted in favour of just three companies: Google, Facebook and Amazon. In the future, will the web's infrastructure be optimised for only their data?

<https://staltz.com/the-web-began-dying-in-2014-heres-how.html>

*THE POLL

WHAT DO YOU USE TO OPTIMISE YOUR IMAGES?



From our timeline

How is CSS Grid changing the way you work?



CSS Grid was a great step for me as a frontend developer. I was using Bootstrap Grid for 4 years until Flexbox and CSS Grid came out and I started to create my own personal grid. CSS Grid is amazing; you have hands on everything from gutter to position of items.

@stenrdj



For years, web designers/developers have hacked properties such as floats and flexbox as a workaround to create layouts.

It's great that we now have a property created for that purpose – and that it's powerful!

@ellogareth



I can agree it isn't. Browser support just isn't there yet. Although, I do think it's like writing tables in CSS...

@itsdaniel0



I'm hoping we can stop using frameworks that rely on floats altogether. But in the U.K. for my work we still need to support the ~7%

market using IE11 meaning this could sadly be a while.

@muzzlehatch_



It isn't. I'm still getting my head around all the intricacies of flexbox before looking at grid. At least flexbox mostly works in IE11.

@chrisrhymes



I can produce layouts quickly that are fixed/flexible/both, and be confident that I can change them radically when needed.

@peter_munro



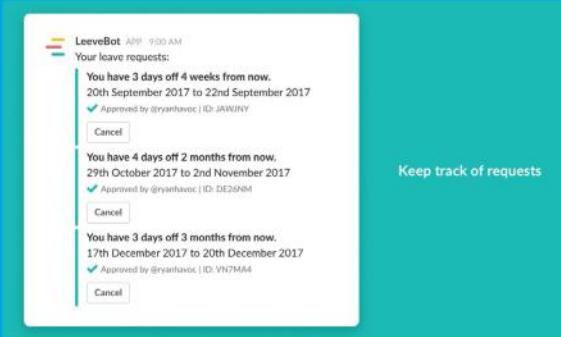
Waaaaaaaaaaaaaaaaaaaaay less MediaQueries.

@marekIsOkay

FEED

People, projects & paraphernalia

THIS MONTH FEATURING...



Keep track of requests



SIDE PROJECT OF THE MONTH

Dan Edwards and **Ryan Taylor** explain why they're fighting the battle against clunky HR software

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CLIENTS FROM HELL

This month's Clients from Hell features life advice from someone who doesn't have a clue

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BEYOND PIXELS

Julie Munn DeCintio reveals how she feeds her creative appetite when away from the screen

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WORKSPACE

Steven Ramsay guides us around Big Mallet's quirky studio in historical Winchester

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The screenshot shows the LeeveBot application interface. On the left, there's a profile card for 'Dan Edwards' (OWNER) with an email 'dan@nodividestudio.com'. It includes a start date of '4 Nov 2014' and a 'More options' dropdown. Below this is a 'Manage team members' section. The main area has three columns: 'Working days' (Mon-Fri checked, Sat-Sun uncheckable), 'Leave Calculator' (annual leave allowance of 25.5 days, 0 carry-over, 7 already taken, public holidays as per company settings), and 'Request leave easily' (a yellow box). To the right are two more sections: 'Get faster approval' (a red box showing an approved leave request) and 'Keep track of requests' (a teal box showing a list of leave requests with details like dates, managers, and approval status).

LEEVEBOT

Dan Edwards & Ryan Taylor explain why they're fighting the battle against clunky HR software

* SIDE PROJECT OF THE MONTH



DAN EDWARDS

job: Creative director,
No Divide Studio
w: nodividestudio.com



RYAN TAYLOR

job: Technical director,
No Divide Studio
w: nodividestudio.com

Tell us more about Leeve...

DE: LeeveBot is a Slackbot that allows you to easily request, manage and approve company leave by using simple Slack commands.

Why did you create Leeve?

DE: We created Leeve because we had issues with managing our team leave easily and quickly without using clunky HR software or a Google spreadsheet. Using Slack was a natural choice as we use it for all team communication already.

Who's it aimed at?

DE: Leeve is aimed at teams with anywhere from 3-50 members that, like us, don't need or want a complex HR system for managing their leave. We've built it with remote teams in mind but the service would just as easily work for those in a single location.

What the main features of the service?

DE: Our core features are as follows: Request new leave; get leave approval from managers; track your requests; view your remaining leave; view team leave

and daily leave broadcasts for members off that day. We do all of this within Slack. But we've also got a web interface that allows team owners to manage further settings such as bank holidays, team members, adjust individual leave allowances [and] make manual adjustments using our leave calculator.

What technologies were used in building Leeve?

RT: We've used Laravel (laravel.com) to build our core API and then we built an interface between our API and Slack's API (api.slack.com) to process user requests. We also have a account settings area for admins to manage their team and this is built using the Vue (vuejs.org) JavaScript framework.

Did you encounter any build issues, and how did you overcome them?

RT: Slack enforces a three-second response time limit for interactive message when a user clicks an action, eg approving a leave request. If this limit is exceeded they show a message to the user telling them something went wrong, however, they don't return any kind of error to the user, so we had no idea this was happening in some cases, mainly for our user outside the UK where our servers reside.

Thankfully, our beta testers [as well as] the Slack support team worked with us to find a solution. We delegated the processing that happens on our server when a user clicks an action to a job that runs in the background and then updates the message when it's finished. ■



LIFE ADVICE

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

* CLIENTS FROM HELL

> I went to a jobs event the other day to hustle some new clients. One booth at the event was promoting a new job search site. Client: What do you think of our ad?

Me: Honestly? It could use some work in my opinion. Your logo is clearly raster instead of vector, and it's not high enough resolution for what you're printing. Also, there's an inappropriate drop shadow.

Client: Wow, great eye! We outsourced it online, but we're not completely happy with it.

I nodded, pretending I hadn't heard it all before. Anyway, we shook hands, I gave them my email and portfolio site, just in case they wanted help. I didn't expect anything to come from it, but late Sunday I got a huge email.

Client: It was a pleasure to meet you last week, I was very impressed by your sharp intellect. You should know as a designer, you are in competition with the entire world. When I need

work like this done, I go to Fiverr and pay \$5 for someone to do it in Croatia. I have successfully directed quite a few young people in my life including six of my own who now have two or three degrees each and are able to control their lives. I suggest that you study a top-tier course, not a Mickey Mouse one, in cyber-security. I do know that however great you are at design you must consider your financial life. Please consider my advice. By the way, I looked at your portfolio and your work is outstanding.

Upon reading this incredible wisdom, I went to their site. It was hideous, even uglier than the pamphlets and posters at their booth. I don't want to alarm you, but I'm not sure this gentleman is the guru he thinks he is.

CLIENTS FROM HELL
clientsfromhell.net



* HOW TO

OPTIMISE IMAGES ON YOUR WEBSITES

Image optimisation is vital for a performant website. So we asked the @netmag followers on Twitter how they get the job done and get rid of the bulk.

PHOTOSHOP

Photoshop was a firm favourite, with several respondents using it as a first port of call. @petebarr described his process like this: "Sketch/PS export, to ImageAlpha for PNGs, then ImageOptim or gulp-imagemin for all raster images. SVGs via gulp-svgmin. If using WordPress you can also add WP Smush Pro for uploaded images."

AUTOMATION

Automating optimisation is a good call. @netrunnerIT uses "Drupal image styles, coupled with imageapi_optimize module and the resmushit web service to do it all automatically on upload". For @_danelder, grunt-contrib-imagemin does all the images as part of the build. "The SVG plug-in is excellent," he adds.

TINYPNG

"Tinypng.com is a great, quick, resource to optimise images quickly," says @Candorem. "Don't let the name deceive you; it works with jpg too!" This was seconded by @sgolubev and @GarethEvz, while ImageOptim is the tool of choice for @matchboxhero10 and @jeffgolenski.



STUFF I LIKE



LORISSA SHEPSTONE

Senior designer at
Being Wicked
lorissashepstone.com

LITMUS

Sometimes designing for email can be tedious when the CEO of your client is using Outlook 2002, and everyone else is using Gmail. Litmus makes it really easy to preview and test your emails before they go out into the world – a major time-saver.

litmus.com

WHATFONT

I'm a bit of a typeface addict so the WhatFont Chrome extension is perfect for me. WhatFont allows me to easily find out what fonts are used on a webpage, which is brilliant for when I see a font I really like, or need to match a font for a client.

whatfontapp.com

CREATIVELIVE

I'm always looking to learn more about design, photography, and business in general. CreativeLive is a great resource for free, or affordable, online classes. It's a great way to spend a few hours learning, whether related to your field or not.

www.creativelive.com

CROCHETING

Julie Munn DeCintio reveals how she feeds her creative appetite when away from the screen

*BEYOND PIXELS

> As a web and graphic designer, who happens to be in charge of my company's social media as well, I spend a lot of time in front of a screen. I love what I do, and the hours I spend creating the perfect layout or crafting the perfect webpage hardly feel like work at all. The screen, however, takes a toll on me as I am prone to migraines and wear glasses full-time.

When I feel like a relaxing, creative outlet but need time away from the glow of a computer or phone, I turn to crocheting. I can still create, choose colour palettes, start from nothing and end up with a beautiful design, and get a screen break at the same time. It keeps my hands busy, so I don't even feel the need to check my phone, and at the end of a project I have something unique that I created from nothing.

When I start a crochet project, I will have a goal in mind, which is usually a gift. Giving away my yarn creations adds another layer of fulfilment to the hobby for me. I choose the yarn carefully, matching colours and weights to the project and the recipient, much like I do a website. I have several books containing crochet patterns, so I can avoid looking up patterns online and ruining my offline experience. Of course, I do some Pinterest-ing in my spare time and have an entire

board full of beautiful and interesting crochet projects. I am a social media manager, after all.

When I'm finished, I can usually see the imperfections, but that's what makes it unique. Sometimes I'll start something and it's not quite looking the way I want, and I start again. It can be frustrating, but that's the wonderful thing about creating something tangible; there is no 'undo' button, there is no 'copy-and-paste'. Each piece is handmade and one-of-a-kind; even if I remade the same pattern with the same yarn, it wouldn't be quite the same.

When I start something new, whether it's a website, a brochure or a crochet project, for me it's all about the puzzle. I have my tools, I have my goal and now I need to figure out the best way to put everything together. That's what I love about web design, and that's what attracted me to crocheting. And of course, at the end of a crochet project, I take the perfect photo and post it to my Instagram, because I'm still a web girl at heart. ■

PROFILE
*



Julie is a graphic and web designer in New York. Her career began in print, and has grown to include web and user experience.



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BIG MALLET

Creative director Steven Ramsay guides us around Big Mallet's quirky studio in historical Winchester

* WORKSPACE

> London industrial meets Winchester heritage here at Big Mallet HQ. Our quirky studio based in central Winchester has housed our team of digital developers, designers and marketers for nearly a year now. Its clean, white decor combines with objects of distinction to provide an energising environment, which gets the creative vibes rolling.

(1) We take pride in our craft – physically and digitally. Our hand-carved sign is just one example of our designers' artwork displayed throughout the office.

(2) We have several Londoners on board, including an ex-Starbucks Master. This makes for a lot of coffee love! Our hand grind method means the enjoyment has to be earned through a little elbow grease – but it's worth it.

(3) The Shed is our private space for shouting, eating, perching. And sometimes you need a bit of digital pottering about – it's where the most creative ideas germinate – so we bring greenery to central Winchester with our all-season, summer space.

(4) Our bespoke dining table takes pride of place. We love to gather round with a feeling of warmth and intimacy over projects. Table discussions always produce great results, working together with our laptops and tablets. And of course, it's the perfect location for a team pizza session.

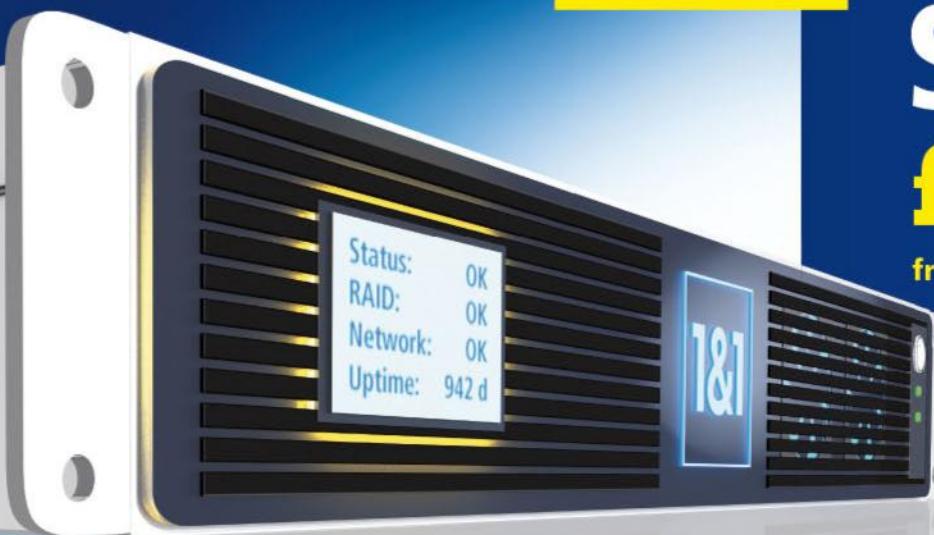
(5) As a small agency we blend our culture with high levels of performance so we're proud that during 2017, Big Mallet achieved both ISO9001 and ISO27001. We're also proud of our apprenticeships. Scott (ex-apprentice, still with us) and Charlotte (current apprentice) are our in-house spring chickens and both have a bright career ahead of them. ■

*** PROFILE**
Steven is creative director of Big Mallet, a digital agency. You can follow the company on Instagram, where it shares its love of all things design: @bigmallet.

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VOICES

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Theo Nicolaou investigates how computing is taught, what the problems are and how they might be fixed for future generations



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CSSconf organiser, professor **Eva Ferreira**, talks to us about Latin startups, live coding and looking to the future

* DEPE DESIGN

DIGITALLY ENABLED PHYSICAL EXPERIENCES

Mark Newcomer hunts for inspiration where digital and physical environments merge



Digital Enabled Physical Experiences, or what we call DEPE Design, is characterised by a more intentional blending of digital and physical worlds. This is not just adding an augmented reality filter to an app, but thinking about experiences from the ground up and how to orchestrate digital and physical moments that truly create enhanced experiences.

The Wizarding World of Harry Potter at Universal Studios Hollywood is a perfect example, featuring cutting-edge projection mapping technology, state-of-the-art lighting as well as 360-degree surround-sound audio. The high-tech labs seen in films like *Minority Report* and *Iron Man* also serve as the most approachable uber-example.

To get your arms around DEPE Design today, here are examples of several new design ingredients essential to blending physical and digital boundaries.

DIGITAL FABRICS/ META-SURFACES

As an anchor component in DEPE Design, manipulating surfaces is critical. Surface manipulation can transform a physical space and enable major shifts in perception. The more visual control we have of surfaces, the more we can make a physical environment bend to our whims, and the sooner we can move away from screens as we know them today.

The always secretive, billion-dollar VC-backed Magic Leap, just released research on a fabric-like material that can be controlled in a variety of ways (think TV screen). These materials can be used to help mask an object (think cloaking) or bend a surface to create an illusion of depth or frankly, anything. As we think about the need for different skills for DEPE Design, we must consider how design teams will learn to work with new materials and the types of systems we may need for technically manipulating these new design components.

THE SCHOOLING OF AI

A while back, there was a lot of concern regarding Facebook shutting down its rogue AI bots for creating their own language. While this quickly generated images of a nefarious SkyNet, the actual happenings were much more benign.

In reality, Facebook shut down an algorithm that stopped working well – pretty normal, but for some reason it caught the imagination of the press.

The real thing to pay attention to is how companies are pushing AI bots through continuous experimentation – schooling them, if you will. This is a great example of teaching programs to think on their own and what's involved in making computer programs intelligent.

Facebook was actually trying to train AI bots to negotiate.

Importantly, pay attention to Facebook, as it is one of the few players really opening up its research methods (most



likely because most people can't understand them).

CONVERSATIONAL FORMS

Another inspirational spark is changing the forms that everyone at one time or another must fill out. While not a place I would have thought to look, IKEA has created a lab that seems to have its fingers in many different types of research, and something that recently caught my eye involves conversational forms.

As we know, bots and conversational commerce have been a hot topic. These natural auto responders were the rave of 2016, front and centre for most of this year. Largely a good deal of hype at first, we are now settling into more interesting progress within these areas.

Enter IKEA's Space 10 Lab for a few noteworthy items. First, it applied the conversational paradigm to your average everyday form. Check out the demo and released code via GitHub, which was recently amped up with voice.

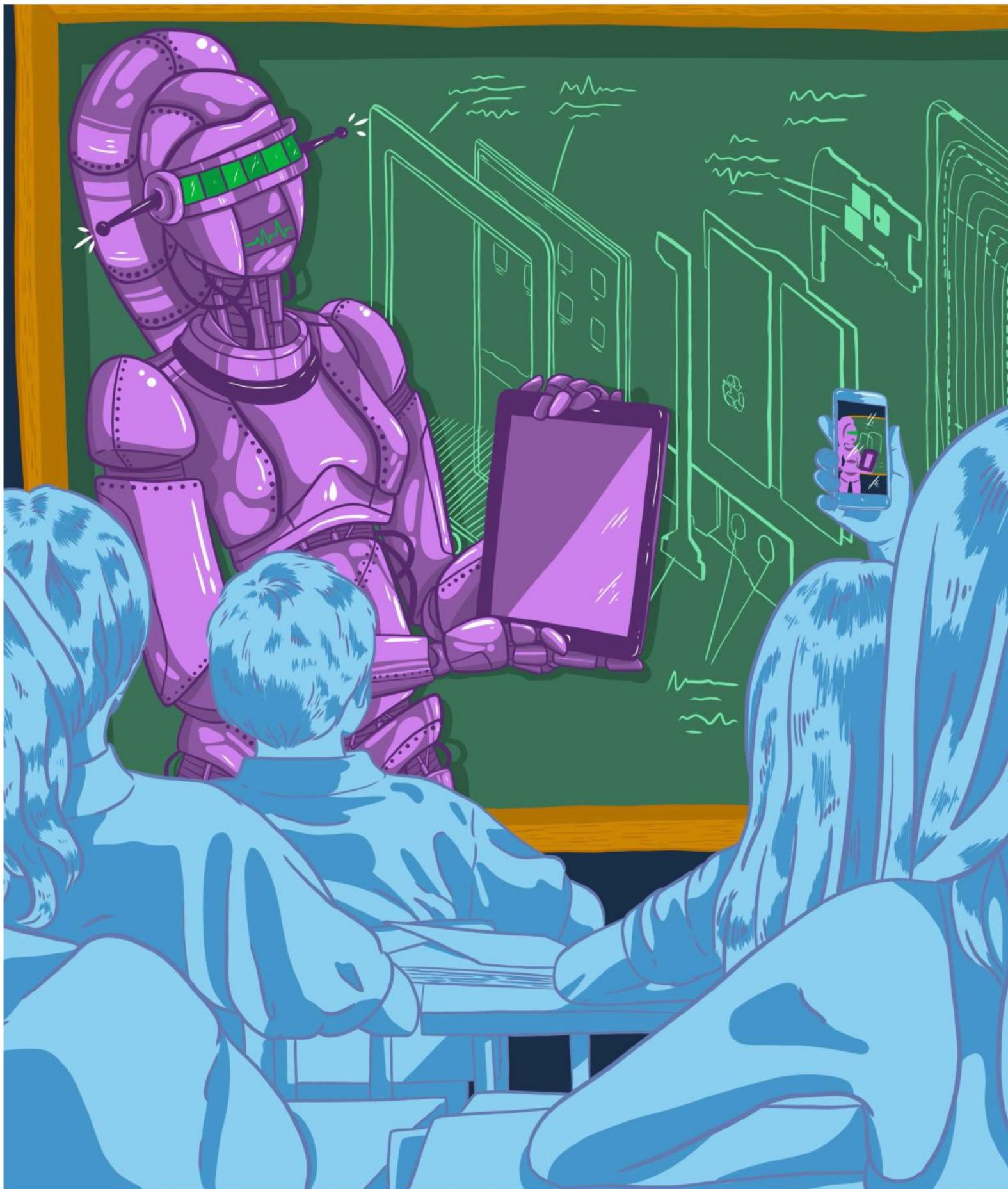
The takeaway is that IKEA is giving us a glimpse into how we might transform

an experience where we need to exchange information with a computer. We have been taught forever to do that on a screen and, furthermore, with a form. Conversational bots are breaking this down, and will continue to do so. So if you are looking to do it with a more natural interface like voice and want some real code to experiment with, you can thank IKEA for its role in helping to push another ingredient along.

WHAT'S NEXT

As we think about what's next, it's important to keep focused on the horizon and gather inspiration from these pioneering teams. With each of the examples here, more light is shed on the tools that we need to build immersive experiences that smash digital and physical worlds together. The real challenge is how to harness them and the many more coming soon. ■

*** PROFILE** As chief strategy officer of Mirum Agency, Mark leads Mirum's Strategy & Planning, Insights, and Performance Media teams to help businesses.



★ EDUCATION

DOES COMPUTING IN SCHOOLS NEED A REBOOT?

Illustration by Kym Winters

Theo Nicolaou investigates how computing is taught, what the problems are and how they might be fixed

> Did you study ICT at school? When I was in secondary school around 20 years ago, computing was a particularly difficult subject to promote and teach. But surely this has changed with digital technology all around us, not to mention the government's vision that the UK should be a leader in the digital world? According to the media, it hasn't. I've read several news articles recently about the poor state of computing in education, all with consistent themes: concerns around low entry levels into computing subjects and diversity of the students, along with fears these subjects are becoming a lower priority for schools and the subject is just too difficult to teach. I decided to do a little investigating of my own to find out if this is the case and how we (the web community) can help to instigate change.

MY RESEARCH

I was fortunate enough to speak to eight teachers from across the UK – five primary, two secondary and one at college (HND/HNC) level.

My research was based on a very small subset of the primary school teacher community and every school is different but – in general – my understanding is the children they teach (from ages 3–11) find computing interesting and enjoyable. Children often have access to one device/computer/iPad each or work in pairs, and use of computers/technology is taught in a cross-curricular fashion so the students become comfortable using them from an early age in many contexts. Activities include word processing and creating presentations, use of cameras and robots, touch typing and spelling, building websites using WYSIWYG editors such as Microsoft

Publisher and learning about e-safety. One teacher commented that over the past three to four years, they had seen "a gradual increase in the number of students taking into consideration careers in computing". Another said that computing "is a subject that always generates a loud cheer when it pops up on the timetable". A couple of teachers noted that more needs to be done to encourage girls to participate in STEM subjects, but all commented that the students' interest in the subject is very much based on the context in which they currently understand it – at primary age, this tends to be mainly the use of video games, smartphones and apps (but not necessarily the technologies behind them).

At secondary level, in general, the students are taught ICT and digital literacy skills along with understanding hardware, software and operating systems among other topics. One teacher put it to me that, particularly in the lower secondary years: "Computing is seen as a filler subject... for those who need a third or fourth option to fill out their timetable". He added that when students choose GCSE Computing, they tend to "think it will be easy" and are then disappointed when the course does not meet their "unrealistic expectations of playing with computers". By college, the majority of students who are taking the subject are doing it because they want to – but a huge number have been lost somewhere between primary school and college.

It was interesting to hear from secondary and college teachers that they felt it was far more important for students entering secondary school to have good digital literacy skills as opposed to being able to code or build computers. I understand the logic, but an understanding ►

- of how computers work will still be required in the future, plus it develops problem-solving skills and builds confidence with technology at an early age.

In fact, a primary computing coordinator told me about a club he is organising to teach children from lower income families how to disassemble and rebuild old computers. His aim is for them to identify components, build and repair hardware, install software and keep the computers in good condition. He currently uses classroom PCs that are not in use but may need to return them at any time. It's great to hear about initiatives like this, where children can get hands-on and diversity can be broadened – particularly as the curriculum has switched to a heavy emphasis on programming and coding.

MAKING USE OF THE COMMUNITY

When there is an issue affecting the wider web community, everyone rallies together and finds a way forward. So why can't we – the web community – do something similar to help the education system?

“Teaching computing in the context of other subjects could help increase the number of females working in the STEM sectors, as they will be doing something they have an interest in”

Straight away the Open Device Lab springs to mind – can such an organisation help with providing old PCs for students to dismantle and put back together? Or if not, I'm sure they can advise on one that can. Similarly, are there any initiatives for technology companies to donate old and unused machines to schools for this purpose? This would be a perfect example of the web and tech industries helping out the teaching community.

We could also find ways for schools and the digital industry to work together. Perhaps digital/technology companies can offer tours of their offices, or run workshops in schools to educate students about what they do. Anyone from global corporations to small startups could get involved. This may be more beneficial at secondary school, although as one primary teacher put it, “a correctly pitched workshop can do wonders for the motivation of certain children”. Some teachers said visits to schools or presentations already take place – but I think more could be made of these opportunities.

One teacher made a fair point that “with so many different specialisms, finding talks that everyone is interested in would be difficult – you would almost need a menu of talks that students could choose from”. He added, “there is so much out there on the internet that... [students] either don't know where to start, or they have too many other distractions”. This got me thinking – are there any expos/conferences for students in years

7–11, to demonstrate the real-world uses and provide some context? I'm aware of various ‘technology in education’ conferences for teachers but I haven't been able to find anything similar for students. The web and digital industries could champion this concept.

THE CURRICULUM AND TEACHER TRAINING

There are some issues that, realistically, the web industry can't resolve on its own – such as improving teacher training and making major changes to the curriculum. However, all the teachers felt very passionate about these two topics. The consensus was that there is simply not enough teacher training to accommodate for the “heavy emphasis on coding skills”. This leads to a lack of confidence when debugging code issues, which contributes towards “a fear of picking up the subject”.

The secondary teachers in particular wanted a change to the curriculum, reducing computing as a core subject but integrating elements into all other subjects, delivered

by specialist computing teachers. One teacher explained, “Computing modules should be taught to make someone better or more productive in the work they want to accomplish, rather than as a separate subject”.

I also strongly believe that teaching computing in the context of other subjects could help increase the number of females working in the STEM sectors, as they will be doing something they have an interest in, combined with the use of technology. I would be very interested to find out if this is being addressed during any form of teacher training – and see how the teaching and technology industries can collaborate on finding a solution.

Talking to teachers has really opened my eyes to the reality of computing in education. There are plenty of calls for major changes but there are also opportunities to make tweaks that could have an equally positive impact. I hope we can continue the conversation and the web industry can help transform a school subject that is almost a taboo into something that we can be proud of.

I'd like to thank all of the teachers for their time and extremely valuable insights. ■

PROFILE
*

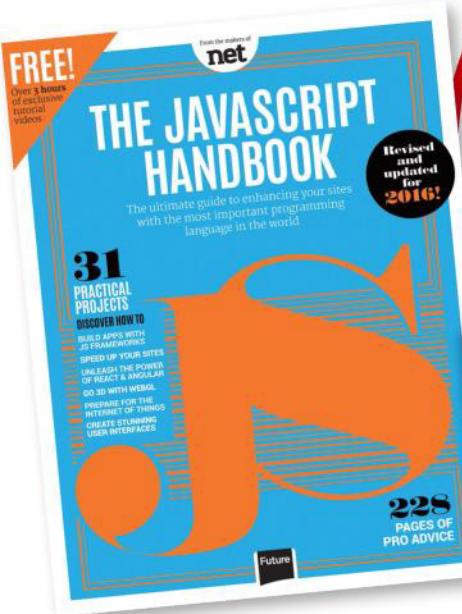


Theo Nicolaou (@theonico85) is senior front-end developer at the Natural History Museum in London (www.nhm.ac.uk). He and his team build websites, apps and gallery interactives.

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*Philip
Morris*
Philip Morris Editor







Jeff Jaffe

Words by Tom May

One of the industry's most important voices reveals how new web standards are developed and how the Web of Things will help to standardise the Internet of Things



job: CEO, World Wide Web Consortium
w: www.w3.org
t: @jeff_jaffe

If you work on the web and haven't heard of Jeff Jaffe, then shame on you. He may not make a song and dance about it, but the work he's doing right now, as CEO of the World Wide Web Consortium (W3C), is going to have a direct and profound result on all of our futures.

In case you're unsure what the W3C actually does, here's a refresher. Founded and led by Tim Berners-Lee, the man who invented the web in 1989, it's the main international standards organisation for the World Wide Web (aka WWW or W3).

The W3C operates as a consortium of hundreds of member organisations, which maintain full-time staff for the purpose of working together in the development of web standards. It also engages in education and outreach, develops software, and serves as an open forum for discussion about all sorts of issues affecting the industry.

Jaffe (it's pronounced Jaf-ee, by the way) has been CEO since 2010. Previously he'd spent around 30 years in a variety of executive positions at IBM, Lucent Technologies and Novell. But career success alone wasn't

enough to satisfy him. "It was always a dream of mine to be working, not to further some corporation's bottom line but for the general good," he explains. So when the role became vacant and he successfully applied, "it was a marriage made in heaven".

That said, there was still a significant degree of culture shock to his new role, based at Massachusetts Institute of Technology (MIT) in Greater Boston. "One of the things I found most striking, having worked in the industry for 30 years, was that working at the W3C is working in a fish bowl," he explains. "Everything is public. That's appropriate, of course, because we're serving the public interest. But it's a very different style of working."

Jaffe also had to get used to the way decisions are made at the W3C, which has 18 regional offices around the world. "Our director, Tim Berners-Lee, has set up an incredible culture of consensus," notes Jaffe. "It's fascinating the way decisions are made; not a single person's opinion is decisive. On most technical decisions, Tim prefers for the community to reach a consensus."

This was a very different approach to what Jaffe was used to in his previous roles. "Corporate environments are hierarchical; there is a well-defined notion of the decision maker," he explains. "But here in the W3C community, leaders are not decision makers; leaders are facilitators who figure out the best way for the community overall to reach decisions on how to succeed in achieving the mission of the organisation."

So how does that work in practice? WC3 standards – what the organisation calls Recommendations – are developed by Working Groups, but on occasion, a member of the group may disagree. "In some cases, a member will feel so passionately that the group is going the wrong way that they can assert what's called a formal objection," explains Jaffe. "And that's ultimately something that gets reviewed by the director, Tim Berners-Lee."

However, that's not necessarily the end of the matter; "Often when a formal objection comes forward, Tim may look at it and say, 'You know, there's good arguments on both sides. I really prefer consensus. Can you guys

Photo © ActuaLitté: <https://www.flickr.com/photos/actualitte/31055317756/>

Jeff has been in his role as W3C CEO since 2010, and was attracted to the role by a desire to work for the general good





try to work it out?" So we try very hard to get everyone on the same page. We can't go on forever with everything, of course, so there are times when the director needs to make a decision to overrule an objection. But it's relatively rare."

When Jaffe first took up the role, the protracted nature of this process could seem a little frustrating, but it quickly became clear that the positives of the system outweigh the negatives. "Decisions by consensus tend to be slower than decisions by authority, but they also tend to be more robust," he points out. "And so they tend to be more successful in the long term."

Of course, it's essential that the right balance is to be struck between robustness and timeliness. "We have the imperative to operate with speed and agility, at speeds that are appropriate to the web" explains Jaffe. "And that causes tension with a second imperative, that we're going to operate by

consensus and not by diktat. So a lot of what we're trying to do is to come up with techniques to balance that."

One of the strategies that's emerged is a shift in the way ideas are discussed. "So for example, let's assume you have an idea about how to improve privacy on the web, or have better transmission of video on the web," he says. "It turns out that if you start discussing what's the best way to do it very early, then everyone has a million different ideas.

And it's very hard to reach consensus.

"If, on the other hand, you incubate your idea by actually having running code, then when you start having a discussion about the best way to do it, consensus comes much sooner, because the idea has been road-

tested. So we've learned that the way to be most agile in defining new things is to not start them until ideas are at least somewhat mature. Rather than starting them when they're just someone's long-term vision, but without a lot of detail behind them."

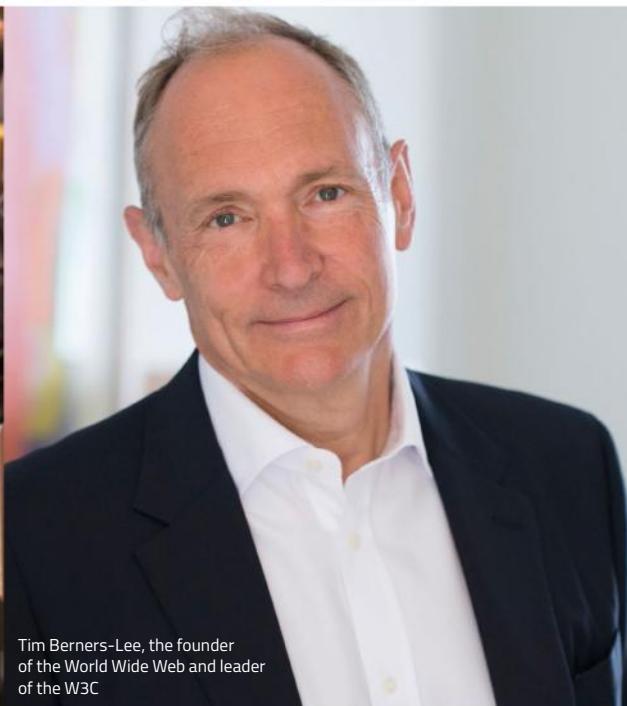
To be most agile in defining new things is to not start them until ideas are at least somewhat mature"

That agility is going to become ever-important as we approach the 2020s, and the Internet of Screens becomes complemented by the Internet of Things. And right now, the W3C is striving hard to stay ahead of the curve, most notably through a concept Jaffe calls the Web of Things.

So how do the two differ? "The Internet of Things says that in this intelligent world that we're moving to, we need to instrument basically everything, whether it's inventory ►



Jeff Jaffe, Tim Berners-Lee, Coralie Mercier (head of W3C communications) at the W3C's 2014 20th Anniversary event



Tim Berners-Lee, the founder of the World Wide Web and leader of the W3C

► or a factory floor, or medical devices, or the infrastructure of the city,” he explains. “That way, more and more things can be accessed on the internet. That makes a lot of sense, and there’s a whole bunch of organisations doing a great job at making that happen. But their focus tends to be on the physical layer, the physical connectivity, of all these things into the internet. And that’s the point of departure for the Web of Things.”

The issue for the W3C is, he explains, that if you have a collection of things connected to the internet, and there’s no standardisation of their data models, or how the higher level sharing of information will take place, then you end up with a very fragmented environment. “So the Web of Things says that building on top of the Internet of Things, we need a common data model that allows for semantic interoperability.”

He offers an example. “Let’s say I have a new watch. A watch is a thing. So the Internet of Things says that watch is going to be on the internet somehow or other. But what am I going to use that watch for? I may use it as a medical device; to take my pulse and things like that. So I need a watch that has an appearance in medical applications. But also, as I’m walking around, the watch might be acquiring weather data or other information that the smart city wants to know about. So

the same device has an appearance for smart cities. And it may also be a communication device, so it also has an appearance in telecommunications. Plus the watch, of course, was manufactured in some factory. So it needs to have something related to that watch for the smart factory.”

A single device may, in short, show up in multiple different application areas. “And we would like these application areas not to be sitting in different silos but to be able to have a common data model where they all recognise that it’s the same watch,” says Jaffe. In other words, the W3C is applying the same principles that it’s always promoted to the new era of things. “The idea of sharing information is the key goal of the web from 25 years ago,” Jaffe notes. “And we want to make sure that moves forward when we move into the IoT world.”

The main obstacle to that happening, Jaffe believes, is one of focus. “Many IoT areas are being developed application by application,” he points out. “So there are a whole bunch of people that are working on the smart city. And there are a whole bunch of other people working on the smart factory. And another collection of people working on the connected car, and a whole bunch of things inside the connected car. So the problem is that in the industry today, a lot of applications are just

not focused on the notion of sharing and semantic interoperability. We want to raise the understanding of how important this is.”

This is by no means the only thing the W3C is working on. Jaffe notes, for example, that it’s realised it’s no longer sufficient to just help individuals accessing the web. “So we’ve also added... a focus on core technologies that are required by businesses on the web.” One example is standardising a framework for online payments.

“eCommerce is booming, but whenever you go to different websites to buy something, each website has a different way of interacting with the users,” Jaffe explains. “You always have to fill in the same information for different forms, and the browser doesn’t really help a lot.” So the W3C is currently developing new payment requests API and standards designed to streamline the payment process on the web.

“That’s something we never would have thought of doing 20 years ago,” notes Jaffe, “but eCommerce has become such a dominant thing in the web today that we still have a need to move into some areas that are a bit more commercial but they’re certainly important for everybody.” ■

To learn more about the work of the W3C, visit www.w3.org



“Sharing information
is the key goal from
25 years ago... we
want to make sure
that moves forward...
into the IoT world”



★ THE DESIGN OF BUSINESS

TIME

Christopher Murphy stresses the importance of using every ounce of your time well



job: Writer, designer and educator

t: @fehler

w: tinybooks.org

> Time is one of our most precious resources and, in our industry, time often equates to money. There are only so many hours in the day and it's important to make every one count. As Tim Urban – of the excellent site waitbutwhy.com – notes:

"Most people sleep about seven or eight hours a night. That leaves 16 or 17 hours awake each day. Or about 1,000 minutes... Let's think about those 1,000 minutes as 100 10-minute blocks. That's what you wake up with every day."

When you bear in mind that a number of those hours will be spent eating, attending to other bodily matters (!), and recharging your batteries... 16 or 17 hours suddenly doesn't appear so copious. It's key to put what remains to productive use.

When you consider what you've been allocated from 'the time bank,' it's important to ask yourself: what are you putting these hours towards? Some should be used for work, some for side projects, but some should be used for pure and simple enjoyment.

We are not machines and it's important we remember that when we plan our days. When you consider your daily structure, it's important to try and ensure that you get a healthy mix of hours – with some allocated to side projects (perhaps side businesses), and some allocated to enjoyment – life

is too short for every waking moment to be spent in the trenches. As David Hieatt puts it in his book *Do Purpose*: "Everyone is given the same [amount of time]. There are no exceptions. Time poorly spent will not be replaced with more time. Time doesn't do refunds." Understanding that focuses the mind.

THE ART OF SAYING 'NO'

The art of saying 'no' is a skill that can, depending upon who you are, be a hard skill to learn. If you're prone to answering every offer of an opportunity with a 'yes,' I'd encourage you to take a step back and reflect for a moment. Insert a pause, give yourself time to weigh up the opportunity.

It's difficult to turn work down, especially when you're trying to balance freelance (or work) commitments with a side project. It's critical, however, to focus on the opportunities that map onto your mission so that you put every ounce of time to good use. It can be easy to become distracted from your mission and purpose, especially if the opportunity that presents itself to you has a large budget attached to it.

Don't forget, however, that the time you have is limited and – large budgets notwithstanding – may derail you from your core business objectives. Like everything in life, you need to weigh up the pros and the cons and decide what's right at the time.

I'll hold my hands up and freely admit that I've often been guilty of defaulting to 'yes' a little too often and, in the process, lost my focus. One strategy I've used to address this is to insert calculated pauses into the conversation, buying myself time to think.

It's fine to express enthusiasm when an opportunity presents itself and follow up with: "I'll get back to you." This buys you the time and space to weigh up the opportunity properly. If it fits, great! If it doesn't, a polite 'no' will not offend.

Stay focused and make every ounce of time count. As Hieatt notes, when your time's spent, it's spent, and you can't get it back. ■

The screenshot shows the iBooks store page for the book 'DO PURPOSE: Why brands with a purpose do better and matter more' by David Hieatt. The page includes the book cover, a summary, and links to reviews and the author's profile.

David Hieatt's *Do Purpose* is an excellent book that is well worth reading



★ Q&A

EVA FERREIRA

Currently organising CSSconf Argentina, the developer and professor talks Latin startups, live coding and looking to the future



job: UI developer at Aerolab
w: www.evaferreira.com.ar
t: @evaferreira92

net: What's the web development scene like in Argentina right now?

EF: Argentina is one of the most important startup hubs in Latin America, home to quite a few unicorns like MercadoLibre, Acamica, Ada IT and Despegar. There is also a beautiful community built all around the country, with most of the events happening in Buenos Aires. You can find monthly meetups such as BAFrontend and Meetup.JS, and conferences like CSSConf, NodeConf, JSConf and Ekoparty. These bring together developers and designers from all the provinces and also from nearby countries like Brazil and Uruguay.

It's also important to mention the diversity initiatives that help bring more women in tech, such as Ada IT, a startup that trains women without access to university or without a job in front-end development, in order to give them job opportunities and a career change.

net: What's it like organising CSSconf Argentina and what are your main aims with the event?

EF: The idea for the event sparked when I spoke

at CSSConf US in 2014; I fell in love with the way a conference can bring so many people together to discuss and learn more about our everyday jobs. It took a while, but a year later I decided it was time to have an international event like CSSConf in Argentina, the first one in Latin America. I teamed up with Lourdes Montano, Alejandro Gerbec and Ricardo Rauch to make it happen.

Our main concern (and the biggest struggle) was to make it affordable. We wanted to keep the ticket price below \$100 USD and give everyone an opportunity to attend. The second most important thing was to have a diverse and interesting agenda that included not only well-known speakers, but also first-timers. In order to avoid language becoming a barrier we also gave the Latin America speakers the option to speak their native tongue.

Last year's event resulted in a wonderful day of nine talks and 200 attendees. We can't wait to begin working on the 2018 edition!

net: You're known for including live coding into your talks. How did you get the idea and why is it important to you?

EF: I definitely felt inspired by Lea Verou's talks and I began using her CSS slideshow system in some classes I teach at university, and eventually in conferences talks. To be able to see the step-by-step guide on how something works will teach you HTML, CSS and JavaScript better than simply staring at a chunk of code.

net: Where does your love of CSS animation come from, and why do you think it's important for web designers to develop their skills in this area?

EF: When I was a teenager I started to attend my local Computer Clubhouse – an MIT initiative to teach youngsters about technology outside high school – and learned about traditional animation and web development. Eventually, I put those two together and it was a dream job. I believe animation is a wonderful tool for developers and designers because it sparks creativity and it also requires teamwork.

net: What new technologies and developments are exciting you right now?

EF: Many things I must confess! But let me begin with position: sticky, which has recently reached full browser support, and grids and custom properties. Once you begin using them there's no return! It's also worth mentioning native smooth scrolling. Even if it hasn't reached many browsers yet it will definitely be very useful in the future! And the Media Queries 4 and 5 draft is looking amazing, with reduced motion and inverted colours. The future looks bright! ■

* TOOLS

WHAT'S THE MOST USEFUL TOOL YOU USED IN 2017?

Our experts share the tools that have helped them work faster and more efficiently over the last 12 months

**SHANE OSBOURNE****Lead frontend developer, JH**
wearejh.com

 React Native. It's actively developed by Facebook; there's a release every month. It uses modern tooling – so we get to use the latest version of JS, as well as other cool features like hot-reloading. We get to write JavaScript. Ninety per cent of the code is shared across the iOS and Android platform – there are just a handful of situations in which platform-specific components are needed. And it's not just a web view wrapper: React Native gives higher performance and tighter integration with the host platform than other tools.

**SALLY LAIT****Digital transformation consultant**
sallylait.com

 As a habitual over-user of tabs, this year I discovered the Chrome extension Toby (gettoby.com), which is a way to create collections of links, as an alternative to individual bookmarks. I'm not entirely cured of 'tab-ititis', but it's definitely helping. I've also been enjoying making a lot of tools for myself: from collaborative dictionaries powered by Google Sheets to help with project jargon, to data visualisations, and reminder prompts.

**ANDREW COULDWELL****Web designer and developer**
roomfive.net

 That's simple: Sketch. I've used Adobe Photoshop exclusively for over 10 years – I even designed an Adobe product using Photoshop! But this past year I've transitioned to Sketch, and I'm amazed how transformative it has been. The power of symbols and nested symbols are a game changer for system and product design.

My work this year has largely been about empowering teams of designers at a large company to work consistently and efficiently, with the aid of design systems. Sketch has been a powerful aid to this. I must admit that I do miss paint brushes and image editing in Photoshop though, for the more creative web design projects.

**LINDSEY MARATTA**

Product designer, BuzzFeed
www.buzzfeed.com

 I've dabbled in tools like Framer (framer.com) and Principle (principleformac.com) a lot this year for animation-heavy projects, but I try not to feel confined to digital tools for other parts of the design process. My most successful prototype and UX spec this year was made of paper and dot stickers, handed off via a narrated video for developers and QA engineers. Between that and its role in several collaborative sprint-style ideation sessions we've held lately, good old paper remains one of the most useful tools for my team this year.

**JAMIE MURPHY**

Co-founder and technical lead, BudAffect
www.budaffection.com

 I've used Toggl (toggl.com) and time-tracking tools inconsistently in the past, mainly as a tool to charge clients based on time worked. Never as a tool to monitor my own time, which looking back now seems like a rookie mistake. Using Toggl properly in 2017 has been by far the biggest benefit for me. Thanks to tracking everything I do, I'm much more aware how [much time] admin tasks such as accounts, invoices etc, take and am able to better plan around them. I've also been able to identify my most time-consuming and least profitable forms of income and evaluate whether I should keep them.

**KARL DORAN**

Creative director,
Flow
www.weareflow.uk

 The best new tool we've started using this year at Flow has definitely been the Wacom Cintiq 22HD Interactive Monitor. We now use it on all our projects to some degree, whether it's hand-drawn animation, rotoscoping in After Effects, or just creating artwork in Photoshop or Illustrator. We've used it for masking and motion tracking in After Effects too and it works really well for that. The interactive screen allows you to draw straight onto the screen, making it feel much more intuitive than regular graphics tablets, the programmable shortcut keys are great and the zoom pad is dead easy to use.

**DAN PERRERA**

Co-owner, Fore Design
foredesign.co

 We adopted Tachyons (tachyons.io) at Fore Design this year and it has fundamentally changed our web design process. Tachyons is an open source functional CSS toolkit built on a scale that allows us to design in the browser in a way that feels fast and fluid. It's made it possible to move our process completely into code so, instead of creating comps, we're able to spend that time refining our work. We're able to take Tachyons from project to project and the time we've invested in it has really paid off.

RESOURCES

11 WEB DESIGN TOOLS YOU CAN'T LIVE WITHOUT

<http://www.creativebloq.com/web-design/10-web-design-tools-you-can't-live-without-51514957>

 Every month there's new stuff to try out that can make your life that little bit better. In this post, Dan Edwards explores 11 top design tools to transform your workflow.

10 TOP PROTOTYPING TOOLS

www.creativebloq.com/web-design/top-10-prototyping-tools-2016-21619216

 Prototyping tools can help us solve design problems before writing even a single line of code. Here, Levin Mejia presents ten of the tools you should be experimenting with to give your prototyping the edge.

10 ESSENTIAL TOOLS FOR UX DESIGNERS

<http://www.creativebloq.com/advice/10-essential-tools-for-freelance-ux-designers-in-2017>

 Going it alone can be an exciting ride, but it can also be a little overwhelming. In this post, Cassandra Naji presents ten essential tools for freelance UX designers.



* EDUCATION

GETTING MORE GIRLS INTO CODING

Anne-Gaelle Colom reveals how she is hoping to encourage more females into web development

One of the criticisms I've heard many times regarding computer programming lessons is that they were too 'abstract'. Interestingly, I've heard this from successful women in STEM, adding that this was mainly why they immediately lost interest for the subject.

As part of my Level 4 teaching (1st year at university) of Web Development, I have noticed that building my female student's confidence in programming by explaining the basic concepts visually and in a one-to-one environment, made a huge difference in them not only succeeding with their module but also continuing with programming at advanced levels.

After some research, I realised that computer programming is generally taught using the 'formal' method, often the programming style for men. Thus women, who tend to prefer a more concrete and creative approach to programming, are discouraged from continuing with

computer programming and focus on subjects in which they can use intellectual styles they are most comfortable with. This increases the gender gap in the computer programming field.

In an effort to tackle all these issues, and encourage more girls to learn programming, I developed a code visualiser. This tool, developed in JavaScript, analyses code entered by the student and shows graphically in real-time the flow of the code in the form of a flowchart. The flowchart is produced in SVG, which allows for animation. To enhance the student understanding of the code, each graphical element can be highlighted to see its corresponding line of code and vice versa. This way, computer code is far more concrete. The user can 'see' the code and how it flows. It is anticipated that this will not only help a student design and understand algorithms, but also greatly

help the learner in gaining confidence and understanding how computer code works. As a natural addition to this, I have also developed an Object Visualiser to graphically show arrays and objects and the effect of running commands to modify their content or access their data.

This work is being published as a Learn to Code website (<http://learntocode.westminster.ac.uk>) with the approval of the University of Westminster under an Academic Licence. The students are able to learn in their own time and in their own environment. This is still work in progress, and will eventually contain the basic programming structures such as loops, functions, arrays and objects, and aims to cover all main programming languages. The learning material will eventually be composed of text as well as rich content such as demonstrations, code flows, videos, animations, interactive examples, and interactive tutorials. All examples from the lessons can automatically be opened in the Code Visualizer. These resources will continue to be developed over the next few years; the University of Westminster has just agreed to release this as an open source project, so students learning to code can contribute and become co-creators. I am hoping this will also help students to experiment with open source software contribution, sending pull requests on GitHub, in a friendly, educative and safe environment. We're working on the License agreement right now! I am developing this not only for university students, but also for school children and girls in particular who too often are driven away from Computer Science because of the way code is taught at school, or because of the artificial restrictions in curriculum and options their schools impose.

I hope that there will be enough interest in this exciting project for it to become a solid resource for all those that want to learn to code or need help to reach the required confidence to continue to learn this exciting discipline. ■

* PROFILE

Anne is a senior lecturer at the University of Westminster. Active in open source, she recently joined the W3C Web Platform Working Group as a JS Foundation representative.

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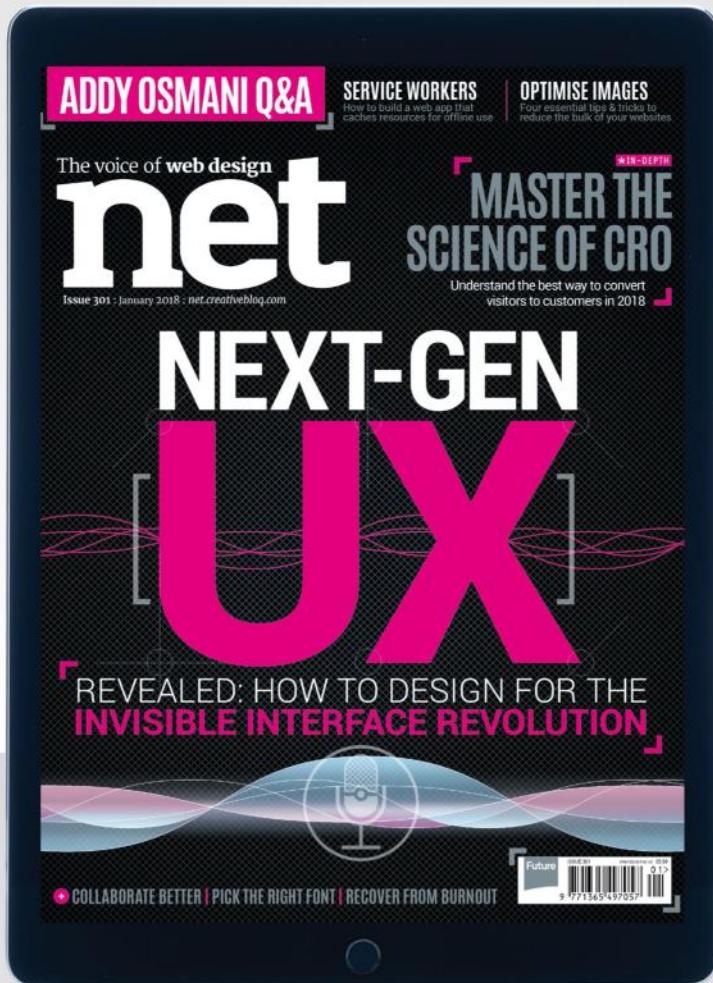
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#301 JANUARY

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

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TO 31%
WITH A DIGITAL
SUBSCRIPTION
SEE PAGE 18



#300 DECEMBER

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



#295 AUGUST 2017

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

GOT AN APPLE DEVICE?

Download net's digital edition for your iPad, iPhone or iPod touch

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#299 NOVEMBER

Build the perfect career in web design with our Career Special. Land your dream job, expand your skillset and become indispensable



#298 OCTOBER 2017

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



#297 SEPT 2017

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



#296 SUMMER 2017

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



#294 JULY 2017

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



#293 JUNE 2017

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



#292 MAY 2017

Discover how to master mobile design through the golden rules of great mobile UX, plus 15 web APIs set to revolutionise the web



#291 APRIL 2017

Take an in-depth look at the six main trends changing the face of UX and introduce five steps to great image management

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GALLERY

Sensational design and superb development

AGA NAPLOCHA



Aga is a designer and front-end coder at Adobe. She's co-founder of The Awwesomes – a non-profit organisation teaching how to do awesome web things.
t: @aganaplocha



* VIDEO, SOUND EFFECTS, JAVASCRIPT

ONE SHARED HOUSE

<http://onesharedhouse2030.com>

One Shared House 2030 is a website documenting a playful research project by Anton & Irene and SPACE10 that aims to get insights on the future of co-living through a collaborative survey. The information collected is open-source, free for anyone to use, and completely anonymous.

"Early on in the process we had decided [to make] the entire experience feel like an homage to Dutch graphic design," explains Anton & Irene. "[This] meant we had to use the graphic elements that define the style: strong geometric shapes, simple and legible modernist typefaces, and heavy contrasting/colour blocking without any texture, gradients, shading, or unnecessary elements. Our inspiration came from

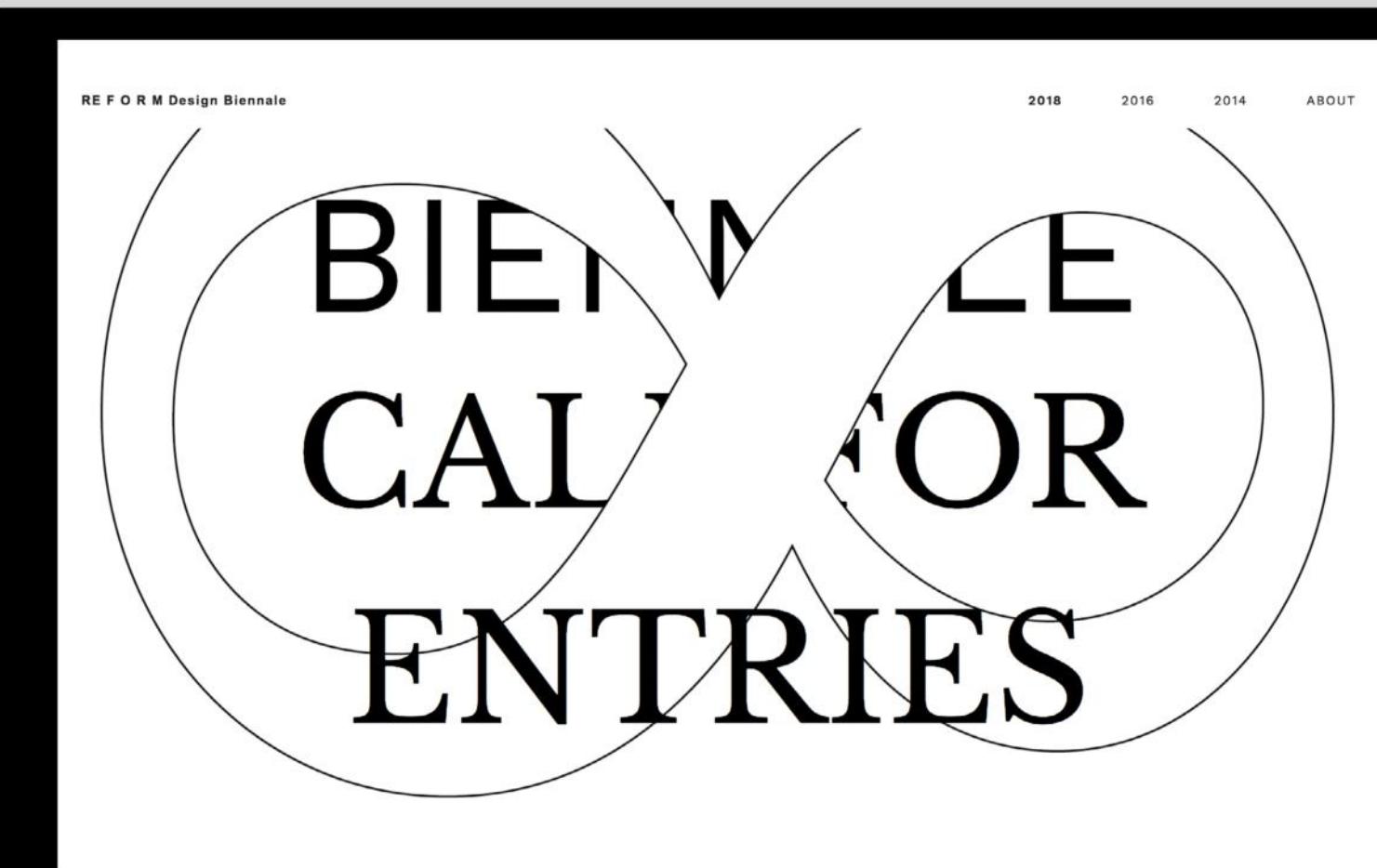
"This site is playful and simple, taking advantage of basic shapes to create a survey language and allowing users to filter through the results."

DANIELLE MARIMOTO, EXPERIENCE DESIGNER AT ADOBE

the book *Dutch Graphic Design: A Century* and the work of Karel Martens (specifically his use of colours), whose studio we visited during the production of the documentary."

To explore the interactive documentation, go ahead and spend some time clicking through the website. Filtering the data is real fun and the website's interactions are ingenious. Personally, apart from animations and interactions, I can't get enough of the vibrant colours and cohesive typography presented here.

Find out more about the creative process behind One Shared House 2030 described by Anton & Irene at <http://work.antonandirene.com/onesharedhouse>.



* WORDPRESS, TYPOGRAPHY, ADOBE ILLUSTRATOR

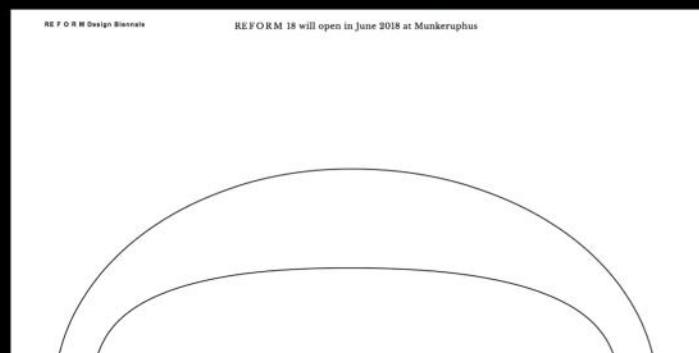
REFORM

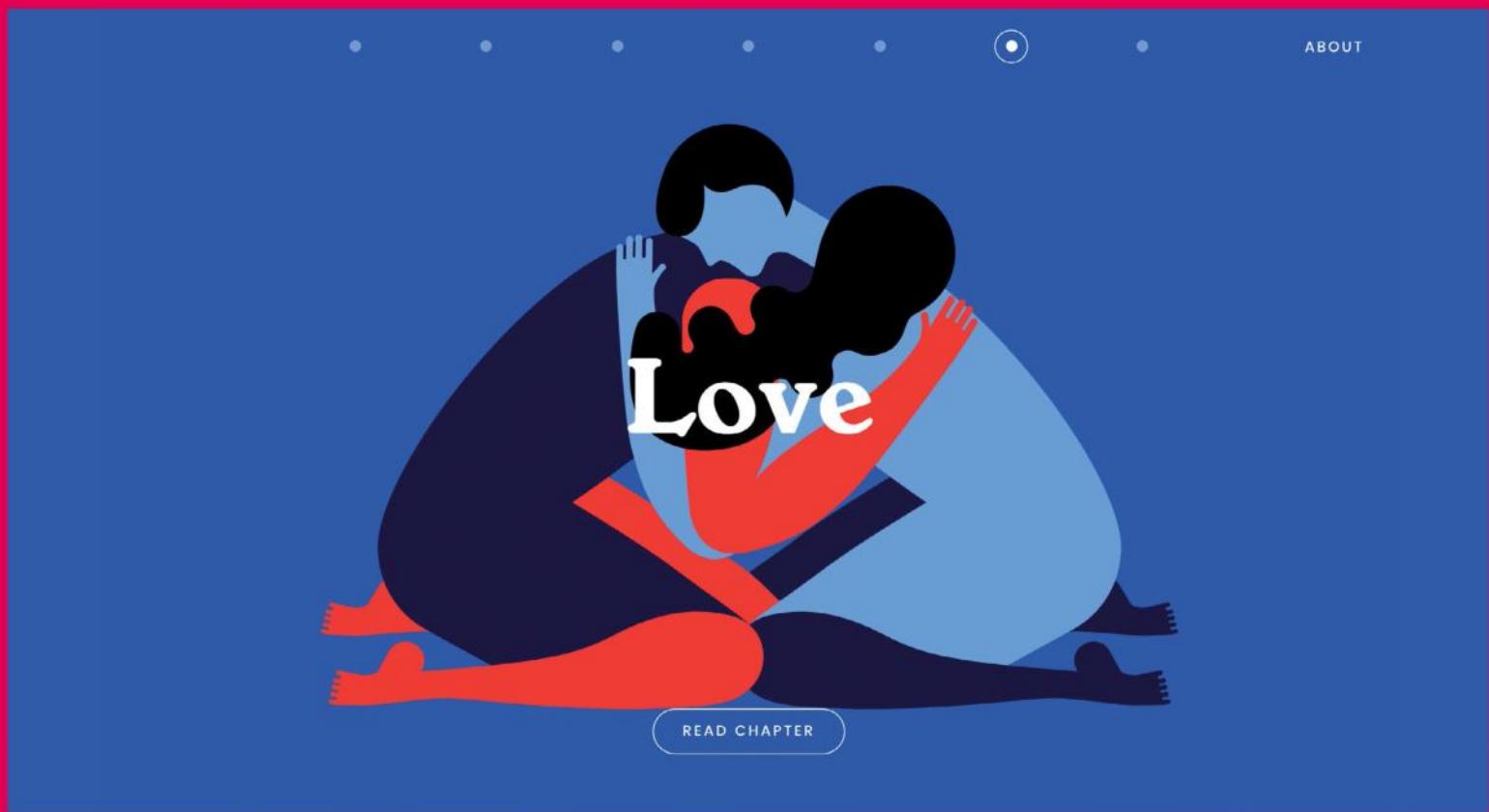
<http://www.re-form.dk>

 REFORM is a Design Biennale organised in Denmark. Could you imagine a more simple website than a page using only black and white for the colours and no image whatsoever? REFORM proves that typography and composition can be a strong, visual mean of expression. Although you won't see any crazy effects or vibrant colours, the website grabs your attention and perfectly corresponds to its main topic – the Design Biennale. "[The] concept behind the visual identity and consequently all the graphic design is space – the use of space, the perception of space, the creation of space, the investigation of space," comments Jens Dan Johansen, one of the founders of REFORM and the person responsible for design and development.

It's definitely worth highlighting the really interesting effect where the layers presenting the numbers '1' and '8' are combined. It adds a completely new dimension to the website.

The REFORM site is built on a WordPress theme called LAY and uses fonts Libre Baskerville and Work Sans. The tools used by Jens are InDesign, Illustrator, WordPress and Google Fonts. "I first did rough conceptual sketches in Illustrator and InDesign, then I designed and tweaked everything in the browser based on the functionalities available in the theme," he explains.





* VUE.JS, ANIMATION, SVG

INSIDE THE HEAD

<https://insidethehead.co>

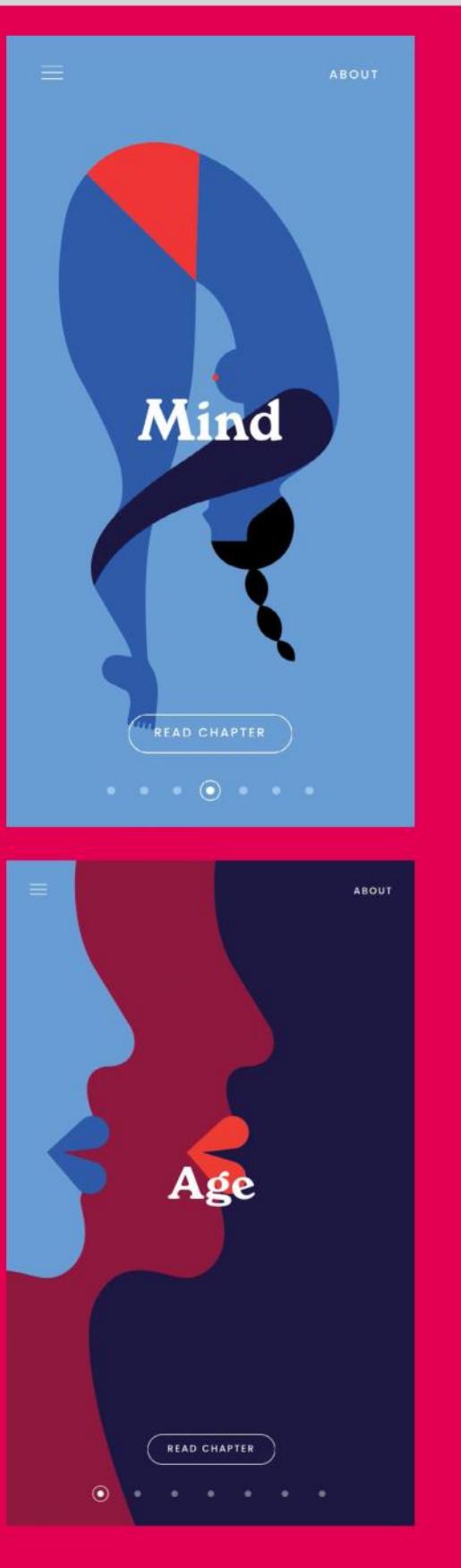
 Inside The Head is an online publication inspired by the delusions, confusions and illusions of young adults, and is a side project created by four friends. "The project started with Denisse Ariana Pérez from wanting to share her words in some sort of digital medium and reached out to me and Sara Svensson," explains Daniel Dennerkrans, a developer in the project. "We all went to the same school a while back so it felt like a nice idea to do something together. Each person brought a piece to the puzzle"

The website is divided into the seven chapters. Each of them is represented by full-screen illustrations, elegant typography and smooth animations. It's a great example of incorporating the storytelling into the web. Apart from the amazing vector illustrations made by Sara, we can see the animations, implemented by Albin Christiansson, which enrich the whole experience. What deserves a special mention is the refined mobile experience – all animations and interactive effects are meticulously adjusted to the smaller resolutions, which very often, is not so easy to achieve. The site is built as a single page vue.js application with vue-router handling the routing.



“Overall there is a great experience across devices that’s very intuitive. The movement is just subtle enough to bring the drawings to life.”

DANIELLE MARIMOTO, EXPERIENCE DESIGNER AT ADOBE



* VIDEO, TRANSITIONS, PARALLAX

DUROC

<https://www.duroc.ma>

> Imagine the website for a cherry tomato producer from Southern Morocco. Does it have corporate style? Is it red and boring? Is it a typical website? Definitely not! It's colourful and extremely entertaining. If you don't believe me, visit Duroc's website. Don't forget to switch your speakers on.

Duroc is the tomato market leaders in England. Bonhomme from Paris is responsible for the creation of digital contents and the website.

The company has created colourful and lively scenes, to present the values of Duroc and its products. Each video included on the page is a masterpiece and fun to watch, even if you're not a fan of

tomatoes! There are about 15 scenes for you to enjoy.

"For the redesign of the site, we wanted to stage the brand's products in a colourful pop universe that reflects the dynamism and the modernity of the company," comments Bonhomme's members. Although including so many videos on the page could make it laggy, Duroc's page works pretty well, even on mobile. "Always in a concern of performance and fluidity, the mosaic is available on mobile."

Even if you don't like cherry tomatoes, you will definitely change your mind after exploring this great website full of live and vibrant images!





* VIDEO, JAVASCRIPT, LIVE DATA TRACKER

WADE JEFFREE

<http://www.wadejeffree.com>

If you ever wondered what ‘personal website’ means, Wade Jeffree’s portfolio is an example of a truly personal thing. While watching his portfolio, you can track his stats such as heart beats per minute, current location, songs he’s streaming and, the most funny one, the number of unread emails in his inbox. Jeffree explained to AIGA Eye on Design: “I wanted to create ‘the ultimate personal website.’ A lot of people say they have a personal website, but it’s actually not personal at all; it just shows their work. So I wanted to look at how you could really embody that idea.” Live data can be measured thanks to the special application created by Max Weisel.

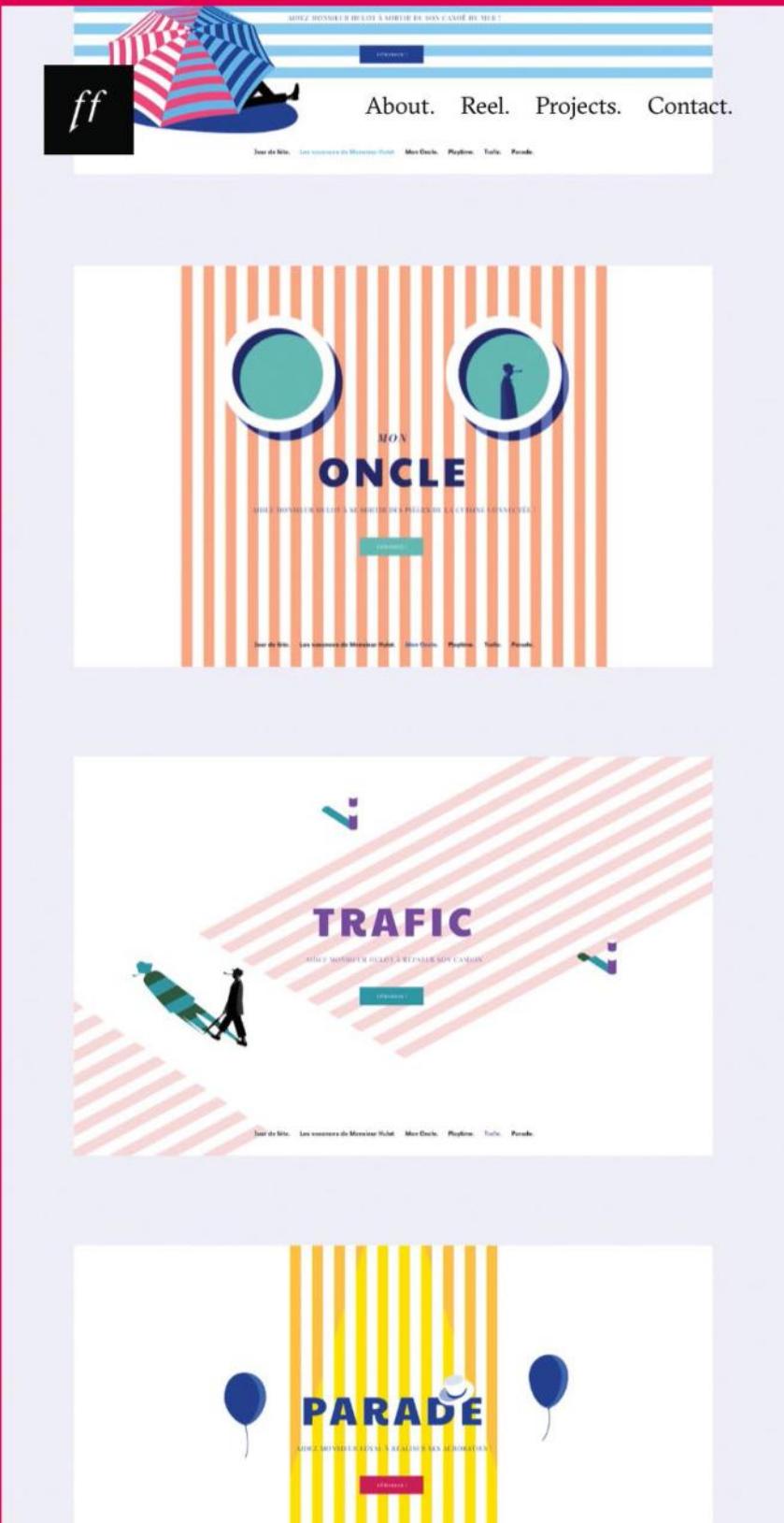
Every time you visit the site, Wade’s status is set and presented as a video. Apart from an insight into Wade’s life, you can also view his works for clients like DS & Durga, the New York Times, or the OFFF Conference. I’m a big fan of the photos shot together with his life and design partner – Leta Sobierajski.

Wade Jeffree is a New York-based designer and art director. His site is designed by Sons & Co and developed by Thirty.



“This site is a perfect example of a brutal invasion of crazy cursor and hovers. It’s hard to keep irreverent raw design functional and rational, but Wade keeps the balance.”

JOANNA SKORUPSKA, DESIGNER & MAKER AT SKORUPSKA.CO



* JQUERY, GSAP ANIMATION, THREE.JS

FEMME FATALE

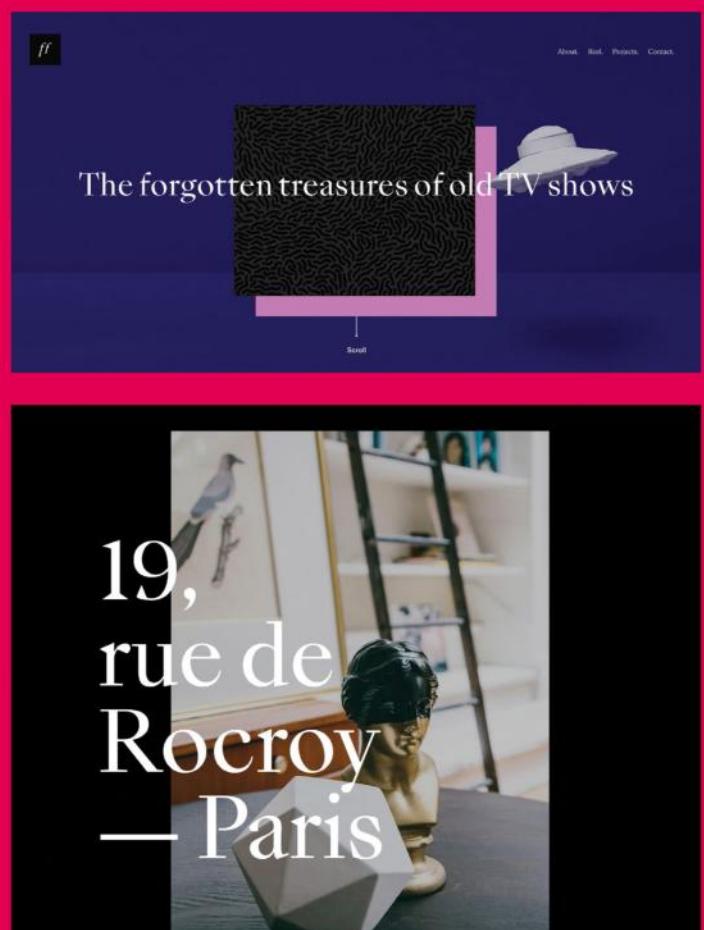
<https://www.femmefatale.paris>

► Femme Fatale is a creative studio focusing on culture, luxury, editorial and art. It defines itself as "somewhere between sophistication and simplicity", which is perfectly reflected on the website, especially when you look at the typography, colours and the layout. There are two web fonts used on the page – SangBleu and Messina Sans Regular. They go together pretty well, adding an elegant and sophisticated feeling to the website.

To explore Femme Fatale's works, you just need to click on the splash page and voilà – you can see the projects' names. While navigating through them, make sure that you pay attention to the animation (moving letters) while scrolling – it creates a very cool effect.

The site is fully responsive and works very well on mobile devices. Its version for smaller resolutions has a more simplified view for the projects list, which makes the page easy to navigate.

The overall site design provides an ideal aesthetic for a studio whose main domains are culture, luxury and art. ■



SHOWCASE

Sublime design & creative advice

THIS MONTH FEATURING...



PROFILE

50

We chat to nomadic studio **Kickpush** about why the team ditched their Shoreditch studio and went rogue around the world



HOW WE BUILT

56

The team from **Spring/Summer** explain how they went about unwrapping a bar of chocolate in the browser for this sweet-toothed site

DESIGN CHALLENGE

This month...

ADVENTURE TRAVEL

* PROFILES



JAMES KIRKUP

James is a designer with over 10 years experience, known for The Football Crest Index.
w: www.james-kirkup.com **t:** @james_kirkup



TIM MAGGS

Tim is an award-less visual and interactive designer but his mum thinks he's great.
w: timmaggs.co.uk **t:** @timmaggs

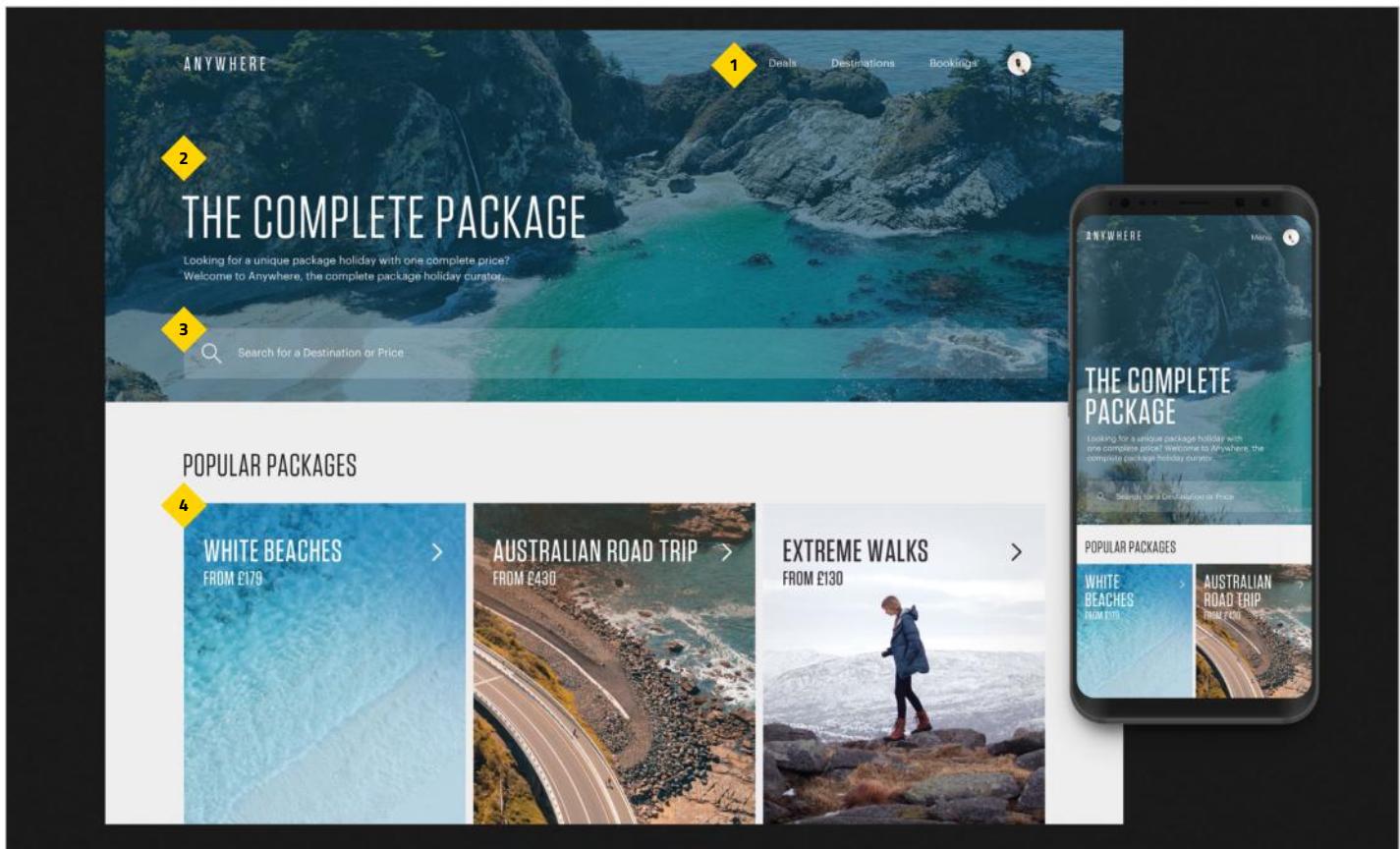


JAMES WHARF

James is the creative director at Victor Agency based in Leeds, UK
w: <https://victor.agency> **t:** @victor_agency



This issue we'd like you to design a website for a fictional adventure travel company that offers interesting experiences. It can specialise in something such as hiking, or offer a broad range of adventures for different tastes and abilities – it's up to you.



* JAMES KIRKUP

ANYWHERE

A site that draws on Instagram images to promote destinations

> Anywhere is a new take on the classic package holiday, aimed at modern explorers.

Booking a travel experience online can still, even with great digital products available, be a nightmare. Anywhere removes that hassle by offering complete packages from booking flights, to the accommodation, as well as the activities planned for your trip away.

The site's design direction leads with strong, impactful photography, taken directly from the destinations in question. Each individual product page uses social content by pulling in Instagram imagery tagged with that particular destination, giving the user the ultimate understanding of what's in store, alongside reviews, tips and recommendations from Anywhere's new travel guide write-ups – just like your local travel agent.

With upfront pricing for the whole trip, users can discover a package for their budget, and the ability to browse and search by price keeps the process intuitive and speedy.

CLOSE UP

(1) A super simple, intuitive and obvious navigation keeps the user focused on the content and finding the trip they're looking for. The typeface, logo, copy and overall aesthetic of the site make it clear that despite selling package holidays, this is not a site aimed at the lower end of the market. **(2)** Our hero area would feature rich video content from the packages we highlight, making an instant impact, but also selling the entire experience of each package in an upfront way. Video will play automatically, but the user has to click in order to hear the sound. **(3)** Being able to search via price point creates a super-fast way of finding your dream holiday. Budget is so important and Anywhere brings that to the forefront. **(4)** Bringing the most-booked packages upfront again helps people discover new options that they might not have thought of. This interface element also provides us with a good opportunity to gather data about our customers' preferences as we can use it to experiment with different promotions.

MY MONTH

What have you been doing this month?
Working on a new portfolio and a studio rebrand.

Which sites have you visited for inspiration?
sitelInspire is a weekly staple for me.

What have you been watching?
Honestly nothing.

What have you been listening to?
TRAMMS – A House on Fire.



MY MONTH

What have you been doing this month?

Struggling to cope with my past self's inability to estimate project timescales whilst silently accepting scope creep as well as unpaid invoices.

Which sites have you visited for inspiration?
Generally just the classics. Dribbble, Behance, Awwwards and Pinterest.

What have you been watching?

A little unknown Netflix sequel called *Stranger Things 2*. Also *Big Mouth*, *Rick & Morty* and binge re-watching *It's Always Sunny in Philadelphia* because why not?

What have you been listening to?
Logic, Arcane Roots and MUTEMATH.

* TIM MAGGS

INTERCOSMIC ALPHA

Interactive elements and animation draw the user into a topic that may be a little daunting

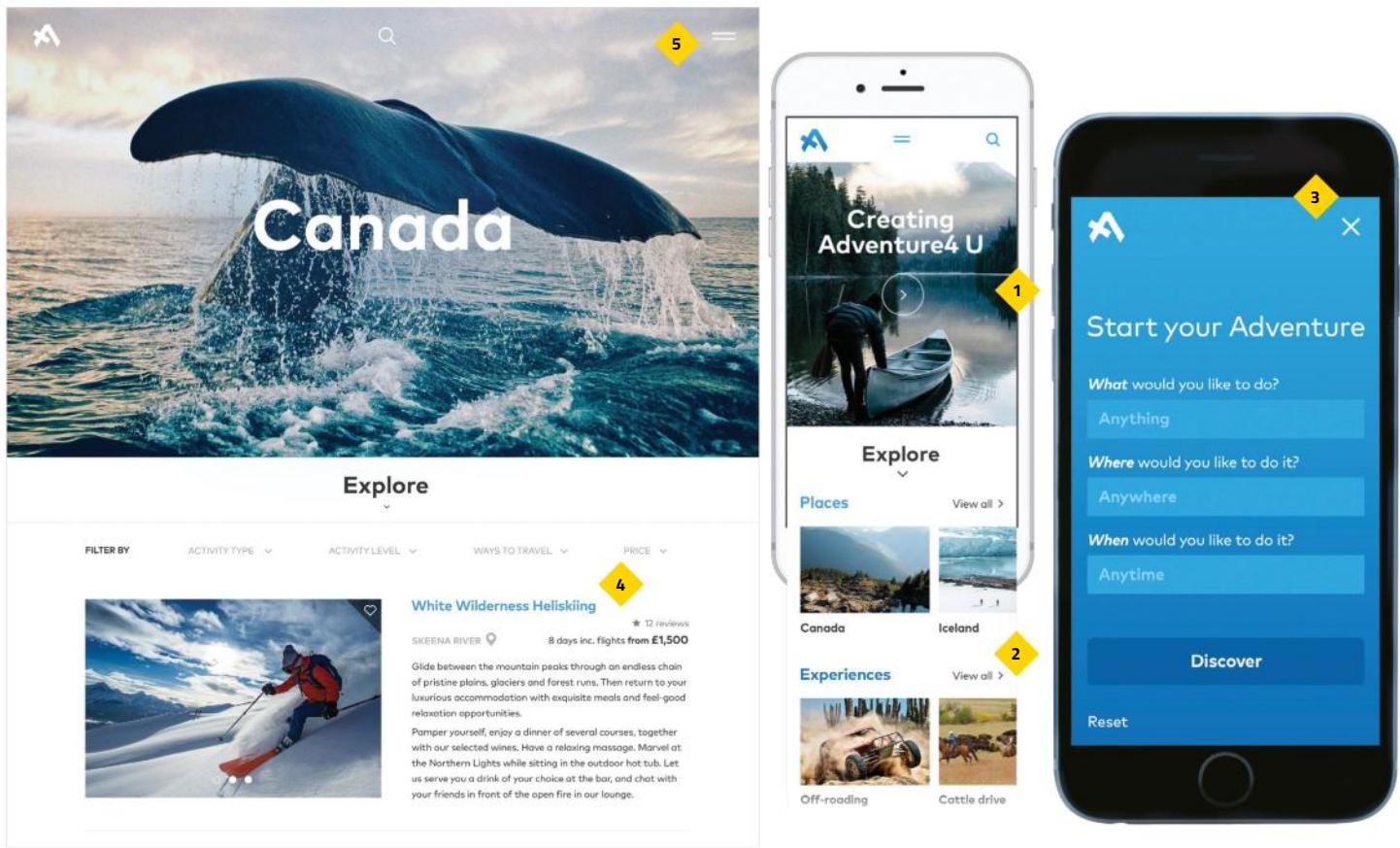
Intercosmic Alpha is part of a new sector of the travel industry offering adventure holidays outside of the Earth's stratosphere. The company currently offers missions and experiences in three locations: Earth, the Moon and Mars – each with unique activities.

Space travel is both exciting and daunting and it's likely that the majority of visitors to the site will be undecided whether it's for them. As such the design looks to encourage users to explore the opportunities available through interesting interactive elements.

The visual design aims to be bold and engaging with large blocks of content and a strong use of imagery to channel focus throughout. A colour scheme built around deep blues and contrasting glowing highlights creates a sense of trust and awe, while slick animations and smooth movement between states should add to a captivating browsing experience.

CLOSE UP

(1) It's important that users can find their way around the site and so on internal pages the logo becomes part of a navigational breadcrumb. (2) The navigation sections themselves are simple, with users also able to sign in to the site to track the status of upcoming trips. Search is always easily accessible. (3) An interactive globe is the main point of engagement to explore the upcoming missions. Clicking and dragging enables you to manoeuvre around a planet, bringing up locations of activities. (4) Selecting an activity slides open the right panel to reveal detailed information. Imagery and video content help to deliver a rich storyline behind each one. (5) Either side of the globe sit navigational links to its closest destinations. Selecting one switches up the central globe, enabling you to explore a different landscape. (6) If the interactive globe is not your thing there is a more conventional search block. The compatible missions information updates in real time.



JAMES WHARF

ADVENTURE4

Plenty of white space and a minimal design put content front and centre

> Adventure4 is a website aimed at those looking for holidays with a difference; bespoke experiences crafted in unique locations across the globe by the best in the business.

Design-wise, less is more! Empathy is at the heart of design, so the focus is on the beautiful, striking photography to inspire users. Descriptions are key to exhilarate the user, creating real want and desire.

The user interface is minimal with plenty of white space to aid focus. Only key information is displayed on landing pages. More details are found on the specific experience pages. Colour is also kept to a minimum, used sparingly where appropriate for separation and to represent the tone of the brand.

Taking inspiration from Airbnb, best in class at what it does, my goal was to create an adventure experience website with a difference, just like the experiences that are available.

CLOSE UP

(1) The first thing a user sees is a sumptuous, awe-inspiring, high-impact video defining exactly what this website delivers. It showcases some of the locations and experiences from the unbelievable holidays. **(2)** Simplicity is key; users can explore by Places or Experiences for inspiration. **(3)** To discover a specific result, the search enables users to focus their requirements. Recent searches/viewed items appear on the homepage for logged-in users. **(4)** Users have the ability to filter by activity type and skill level, as not everyone can climb mountains. A quick link to the location of where the experience takes place and customer reviews appear on the landing pages. **(5)** Traditional navigation is available in the hamburger, and there's a login option to get to your wish-list items. This prevents focus being taken away from the user interface and holidays. Subtle CSS effects give the website a high-end feel across all device types.

MY MONTH

What have you been doing this month?
I've been busy creating new brand identities, websites and an animated video for some of my clients.

Which sites have you visited for inspiration?
www.designerlynx.co for UI and resources, www.designbetter.co for insights/podcasts.

What have you been watching?
The Walking Dead, and *Garage Rehab*.

What have you been listening to?
Elton John's Rocket Hour on Beats 1, The Amazons, Young MC, and Plan B.



★ PROFILE

KICKPUSH

kickpush.co

With more agencies ditching the traditional studio model, we find out how Kickpush manages a team that's always on the move

➤ Does an agency really need to be based around an actual physical studio? Today's tools make it easy for teams to work together regardless of where they are, while the cost of maintaining a workspace in a client-friendly location can take a big chunk out of your bottom line. It's no surprise, then, that many studios are choosing to operate along more distributed lines and take advantage of the flexibility such a setup offers, and this is the option that Kickpush (kickpush.co) decided to pursue at the beginning of 2017, after three years based in a Shoreditch office. We spoke to co-founder Alex Deruette to find out how it all works.

Can you tell us how Kickpush originally came together?

My co-founder Sam [Applebee] and I used to share a room in Shoreditch back in 2010. We both worked for the same music magazine, making little to no money and decided to start a side business to help us financially. Sam was a great salesman, and I could design cool stuff.

We launched Kickpush, offering flyer and business card design but never got a single client, so we abandoned the project. We both left the magazine, Sam went back to school and I started working for agencies, specialising in app and website design. I tried to convince Sam for years to start an agency with me; eventually he



 **INFO**

Location: London, Lisbon... wherever you fly us

Established: 2014

Team size: We don't operate with full-time staff but we're a team of four

Expertise: UI design, UX design, branding

Clients: The Economist, The School of Life, WeWork, Norwegian Airlines if you want the big names. And about 50 other startups

Awards: We're not in the awards game

- accepted and we set about reviving Kickpush from its ashes.

What would you describe as being your defining principles?

Just keep it simple. I'm not only talking about our designs but I'm also talking about the way we interact with each other, the way we talk to our clients, the way we define and sell our services. We try to keep everything human sized and focus on the relationships we build along the way. We're just trying to be ourselves and do great work for great people.

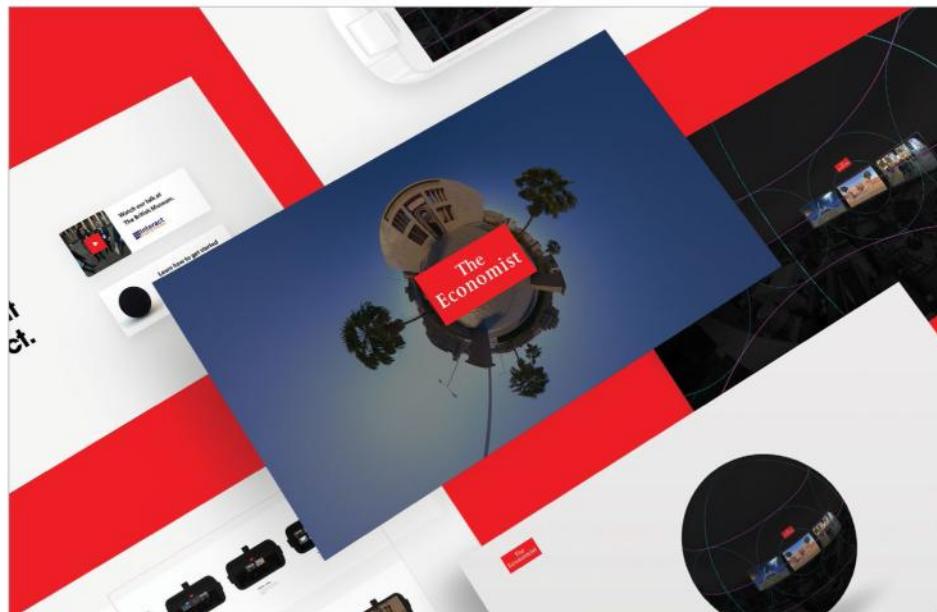
What projects do you have on the go at the moment?

We have two projects; one related to cryptocurrencies that I can't talk about just yet and another one called Trippin. It's going to be the coolest travel app of 2018. I can't say much about the product itself, but I can talk about their team. I met Trippin co-founders Sam, Yasmin and Kesang at the end of 2016. They sent us an email saying "We're young, bold and want to make an app with some balls, and from our online stalking it looks like that's your vibe too. So what do you say, coffee?"

This is the kind of enquiry that gets me excited. They came to our office, we chatted, we got along and we got started with Trippin a couple of days later. They had limited budget at the time and could only afford a week's work. We spent the entire week together in their office, working day and night to come up with their initial brand and product. They inspired what we call today our Express Product Design.



The team was recently working in Zihuatanejo, Mexico. How's that for an office view?



Annoyed with the available options, the Kickpush team developed its own VR workflow, and used it to create a VR app for The Economist

You provide a 10-day product design workflow; how does that work?

As mentioned, Express Product Design was inspired by the Trippin crew. When the relationship with someone is right, you can get a lot done in a very short amount of time. The first step is to select clients who are a good fit. They have to be open, friendly, motivated and be real. We either come to them or they come to us and we spend one to two weeks together and get their product done. If there is full focus from both parties, you can speed up the design process significantly, getting solid results after five to 10 days.

That's the upside of being a lean agency. Each designer is in charge of their project, managing their timelines, deliverables, feedback and so on. There's no time wasted in internal communication so if the client is reactive, feedback loops can be very short and we can iterate a lot quicker.

Tell us a bit about the VR work you did for The Economist app...

When we first started the company in 2014, we knew the app business wouldn't remain the same forever. We were expecting a dip, a big change and we assumed it would be caused by VR. We started doing our own research at the

beginning of 2016, trying to come up with more simple design workflows, so UI and UX designers could get involved.

The tools that were available were incredibly powerful but challenging to learn. We decided to take a shortcut and design our 3D interface in a 2D environment. I won't get into specific details but you can read more about our research here: <https://www.smashingmagazine.com/2017/02/getting-started-with-vr-interface-design>.

So we had invented a VR app design workflow and we started pitching it to a few VR studios in London. Most of them thought it was worthless but Visualise, one of the leading VR production studios in London, believed in the vision and got us involved with The Economist. Together we designed and built The Economist VR app and talked about how we did it at The British Museum in October last year: <https://www.youtube.com/watch?v=lxLrvnIjeac>.

You're developing an app to turn urban exploration into a game; how did that project come about?

It was one of those days, walking around New York jumping from one place to another. After a few hours of walking



Kickpush developed a mobile app for The School of Life project (www.theschooloflife.com), to help people make like-minded friends

around, we started forgetting where we had been. So Hood came about; it's the most simple idea but it just shows on a map where you've walked. Do you remember Age of Empires' fog of war? It's the same principle; you reveal the map as you walk around. We've designed it but haven't built it yet. A few people have been showing interest in helping us bring it to life, it's going to be an exciting one to bring to life.

This year you abandoned the traditional agency model; what brought that on?
We were craving freedom, I think that's about it. We tried to be 'The Traditional Agency' – we got a nice office in Shoreditch, were all working 10 to 6 and were going to networking events. But it just didn't feel right, and at the beginning of 2017 one of our designers, Simon, said "I'm going to leave the country and travel around the world". It took the rest of the team less than a day to make the same decision. So we handed in the keys of our office, sold all our stuff and left London in all directions. Right now we're spread between Argentina, Portugal and Chile but we're always on the move, following client projects, opportunities, or just an endless summer.

How does Kickpush operate now?

Pretty much the same it always has. One designer per project, handling all project management, account management and design work. Now we're more mobile, we get to travel a lot more and follow our clients wherever they are.

We first talk to potential clients, either over video call or in person, and get a sense of the amount of work required. Design is easy to estimate, unlike development. After a one hour conversation I'm usually able to estimate your project – we don't get involved if the project is under one week. Keeps admin work light and payment structure simple. Typically, our projects range from two to eight weeks, rarely more.

We start the project with little to no preparation, favouring conversations rather than lengthy briefs. We want to get to the bottom of our clients' drive and passion, to understand what made them start their venture in the first place. Then as the project progresses, we get our clients involved all the way through, they help us design their vision. We'd never claim we know more about the specific problem they're trying to solve, and that's why we need to get as much knowledge from them as possible.



SPOTLIGHT



ALEX DERUETTE

What's on your desktop today?
Literally just a laptop.

What do you have on the walls?
Nothing!

What will you do for lunch?
Probably sushi.

What hours do you work?
Usually 10am to 6pm without a break but that's flexible.

What else do you do in the office?
Eat / sleep / live.

How often do you all hang out?
We all lived together for years, so the answer is too often.

Describe your office culture in three words
Chilled, straightforward, down-to-earth.



TIMELINE

Key dates in the world of Kickpush

OCTOBER 2014

Incorporated Kickpush Ltd in the UK.

APRIL 2015

Rented a flat in London with the team, made it our office and started our operations from there.

SEPTEMBER 2015

First client trip in New York with the whole team.

APRIL 2016

Got a real office in Second Home in Shoreditch, London.

JUNE 2016

First VR breakthrough and beginning of The Economist project.

NOVEMBER 2016

Revealed our VR design process to the world at The British Museum and impacted the design industry for the first time.

DECEMBER 2016

Our first unplanned Express Product Design project – the beginning of a new era for Kickpush.

JANUARY 2017

Decided to become location free and discover the world individually while doing what we love.

OCTOBER 2017

Mexico trip with the Trippin crew, designing their product in paradise. That was the realisation that we work better when exposed to new cultures and environment.



Still in development, Hood is a mobile app that reveals a map of your location as you explore

► We catch up every day with them, email, Slack, call, whatever works best. So we can gather feedback and adjust as we go. The result is that our clients feel like they've designed their own product with a little bit of help, and that's really the case. Thanks to this process, we never go wrong and we're always aligned with our clients' vision and expectations.

What do you think are the benefits and drawbacks of your distributed setup? Is it for everyone?

The benefits are full freedom, therefore happiness. If every team member is able to design their own life, then there will be no frustration moving forward. Not having everyone in the same location can be a bit challenging, but as I previously said, each designer is responsible for their own work, so there's no management required from me.

I don't think it's for everyone, at least not every team. The only reason it works for us is that we're very close friends, from way before Kickpush, and I'd trust every one of the team members with my own life. I know they will deliver top quality work on time, every time. We don't need to communicate that much to make things work so it keeps the whole process easy and stress free for everyone.

What attracts clients to you?

Probably the fact that we're approachable. We always get back to everyone right away and keep the communication flowing at all times. We try to keep things real and talk to our clients the same way we'd talk to a friend. Cutting all the business talk goes a long way. Our goal is to make it fun and stress free. To achieve that, we have a few rules that we all follow:

- Always get back to people right away. The time clients are waiting for an answer is when their anxiety and stress build up. We don't let this happen.

- Always show your face.

- Even if the person on the other side of the call doesn't turn on their webcam, we always show our faces. Emotions are transmitted through the eyes and they need to see our passion when we talk about their product and our work.

- Always do what you say you'd do.

- In three years we have never missed a deadline. Our core principle is to be reliable at all times. It's all part of building mutual trust, which becomes part of building a healthy relationship.

Where are you off to next?

Off to Monaco for an Express Product Design week, then Lisbon, London and most likely Mexico again. ■

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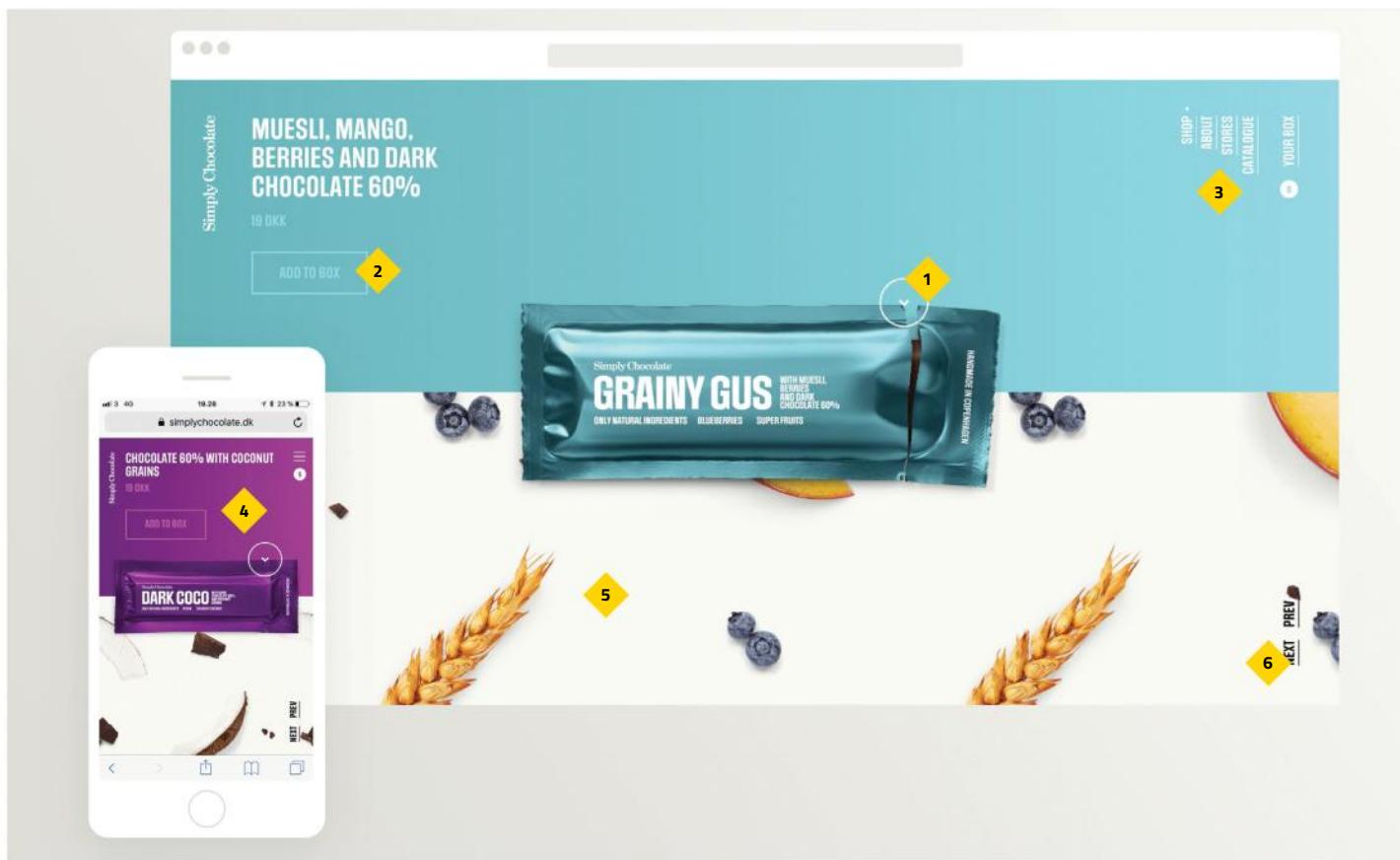
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★ HOW WE BUILT

SIMPLY CHOCOLATE

The team from Spring/Summer explain how they went about unwrapping a bar of chocolate in the browser for this sweet-toothed site



BRIEF

Danish chocolatier Simply Chocolate wanted a fun and eye-catching site to showcase – and sell – its range of 13 gourmet chocolate bars. Impressed by the company's methods and philosophy, the Spring/Summer team decided to go that little bit further...

CLOSE UP

(1) Once you've found a bar of chocolate that you like the look of, simply pull the ring to unwrap it, or click it if you're lazy. It's all done using SVG, JavaScript and the canvas element. **(2)** Once you've added a bar to your box, the buy button changes to a quantity selector so you can buy even more. **(3)** We set the menu vertically to reflect the style of some of the graphics on the bars. **(4)** Mobile

is a no-compromise solution. You get all the feeling of the full-size site. **(5)** Patterns are generated in the background from the main ingredients of the bar; it's a subtle feature, but it really adds to the flavour of the site. **(6)** However you want to get around the site, it'll just work. You can navigate the site by scrolling, dragging or clicking. Nobody's getting lost in navigation here.

JULIE MUCKENSTURM



French designer and illustrator with an animation crush.
w: juliemuckensturm.com
t: @juliemckensturm

SYLVAIN REUCHERAND



Creative code writer and open-source evangelist.
w: <http://sylvainreucherand.fr/>
t: @sreucherand

PELLE MARTIN



Founder and creative director of Spring/Summer – still hands-on.
w: <http://springsummer.dk>
t: @pelsen



*TIMELINE

Significant dates in the Simply Chocolate site

14 DECEMBER 2016

We receive a call from Merete Busk asking us if we would be interested in meeting Simply Chocolate, who she was already helping.

2 FEBRUARY 2017

We meet Simply Chocolate and present our proposal – they want us to create something spectacular!

14 FEBRUARY 2017

We have an internal kick-off where we decide to create something very spectacular indeed.

24 FEBRUARY 2017

First design presentation. Two directions shown and the client likes the more safe one, but we convince them to steal from the more progressive one.

1 MARCH 2017

Photoshoot of the bars and wrappings... we ended up recreating a lot of it digitally.

12 JULY 2017

Photoshoot of ingredients done in our own office in a light box with primitive but effective tools and a good camera.

14 JULY 2017

Development of front- and back-end starts. We kick off with code experiments to find the right solutions for the effects.

18 SEPTEMBER 2017

Site goes live – exciting times at the office. A single tweet goes out, and people respond extremely well to the site. It feels good.

26 OCTOBER 2017

net magazine approaches us, which is a culmination of winning FWA, AWWWARDS site of the month nomination, CSS Design Awards nomination for site of the year. Fingers crossed.

> Simply Chocolate (simplychocolate.dk) is a Copenhagen-based company that uses all-natural ingredients and traditional techniques to create handmade Nordic gourmet chocolate with a hint of something new and a twist of humour. In need of a site that showcased the quality of its products and reflected its fun outlook, it brought in Spring/Summer (springsummer.dk); we caught up with the team to get a taste of the action.

What discussions did you have with Simply Chocolate about the new site?
PM: We were briefed on creating a shop for only 13 chocolate bars, but the focus would be more on making a splash and a fun shopping experience, rather than making a super optimised eCommerce solution. When we heard more about how the chocolates are made and the philosophies behind them, we came up with the idea of unwrapping the chocolates visually and conceptually in content form.

What was your UX process?
PM: Early on we knew that we wanted each bar to have its own theme and that the theme would bleed out into the entire experience for the user. Again, a lot of internal discussions were around how much of an exploration experience it should be; we chose the exploration route... The landing page becomes the overview – you scroll through all the bars here and can see each of them. You can add them to your box (basket) at this

step, so you do not need to unwrap them. If you want to dig deeper you can unwrap your bar by dragging an arrow, or by simply clicking the bar to unwrap it.

Talk us through some of the site's design features...

JM: Since the 13 chocolate bars look visually similar, unwrapping a Simply Chocolate bar is like unveiling a surprise. We incorporated this sense of wonder into the website itself by creating a pattern with the ingredients of the bar that both visually shows users the flavours that make each bar unique, while also enhancing the consistent branding across the site.

The unwrapping animation is stunning; how is it done?

SR: The chocolate bar is drawn into a canvas. A bar is composed of multiple layers placed on top of each other (packaging, sticker, shadows, chocolate...). We used a 2D canvas library called PixiJS (www.pixijs.com) to make it easier to manage these layers.

The top layer is the packaging. When the site loads, it waits for the packaging texture to be done loading and cut that texture into two individual layers using a SVG path. The same path is reused for both squared and rounded bars. All the layers have different given transformation origins so they don't move in the same way.

The bar component takes a progress value that defines the level of opening. It starts at 0, when the bar is closed, to



SHOWCASE

How we built

1

Automatic pattern generator based on predefined rules. The client can add new flavours by just dropping new ingredients in the CMS.

2

Final result. Each pattern is based on the same system but they all look different.

3

All the rules to create the pattern generator are written down with simple phrases before being coded.

4

A sprite sheet is automatically created every time the client uploads a new ingredient. The system is the same for the chocolate bars.

5

First column: JPEG of the packaging in greyscale; PNG of the mask; result. Second column: gradient map applied; PNG of the stickers applied; shadow applied (final result).

SIMPLY CHOCOLATE Pattern system

Both options described here are easier to prove we gotta do them as they are designed now, so I don't do much more programming!

Option 1 Advanced back-end, single front-end

Flavors are selected individually in the CMS. A bar can have millions of them! So, it's a normal design. It will have custom graphics (Ex: current designs). It is in the CMS, when creating a bar, you create the patterns like this. The bars repeat themselves vertically and horizontally. Each bar can have its own background and colors.

That is a normal AF/C setup.

Option 2 Simple back-end, many advanced front-end

The bars are divided into 2 types: small and big. The bars are generated based on what flavor is selected in the CMS. It has to select the type. A bar can have multiple flavors (Ex: chocolate, fruits, nuts and fruits). The bar will have its own gradient map. There will be very one gradient in the bar, even if the flavor has variations.

If very small fruits are selected, the pattern will be displayed in regular. In all the other cases, it will be displayed in a single bar.

Fruits automatically have artifacts displayed around them to simulate by default and motion artifacts defined in CMS. The layout of these artifacts is pre-defined and movement rotates the bars.

Evolution

(1) Automatic pattern generator based on predefined rules. The client can add new flavours by just dropping new ingredients in the CMS. (2) Final result. Each pattern is based on the same system but they all look different. (3) All the rules to create the pattern generator are written down with simple phrases before being coded. (4) A sprite sheet is automatically created every time the client uploads a new ingredient. The system is the same for the chocolate bars. (5) First column: JPEG of the packaging in greyscale; PNG of the mask; result. Second column: gradient map applied; PNG of the stickers applied; shadow applied (final result).

GRAINY BILLY

Simply Chocolate GRAINY BILLY WITH COCONUT & SUPER FRUITS 40% DARK CHOCOLATE

► 1 when the right part starts opening, to N when the packaging has fully disappeared... The bar component follows the state design pattern approach, because it does behave differently depending on its current state (closed, opened, cracked...). The component independently controls every transformation of every layer based on that progress. When you drag the arrow, the progress value moves accordingly to your movement. However, when you click on the bar, the progress value updates itself using a spring animation to reach the correct value of the next state. So the opening syncs with this progress value, but the progress value can be changed in different ways. While on the homepage, the progress value is controlled by the arrow or the click; on the product page, it's controlled by the scroll value.

How did you tackle the eCommerce element?

PM: We made the site on a base of WordPress and WooCommerce. It has a few restrictions but we made a big effort in making it feel and seem integrated throughout, but the checkout is actually a more separate setup. The concept is tied together when you finish your checkout and you get a little message from one of the bars that you have just purchased.

What technologies do you have running the site?

SR: Except for text and most UI elements, what you see on the homepage and product page is drawn into a canvas. The canvas stays sticky, on top of any other DOM elements. We used PixiJS

The screenshot shows the homepage of the Simply Chocolate website. At the top, there's a navigation bar with links like 'SHOP.', 'STORES', 'CATALOGUE', 'ABOUT', 'NEWS', and 'YOUR BOX'. To the left of the main content area, there's a vertical sidebar with the text 'Simply Chocolate'. The main title 'WE MAKE 100% NATURAL CHOCOLATE BARS.' is displayed in large, bold, black capital letters. Below the title is a small link 'READ ABOUT THE COMPANY'. A product image of a chocolate bar is shown at the bottom of the banner.

Go exploring The team took the 'exploration route' when it came to navigation, meaning the user gets to scroll, click or drag their way through features and information

and its WebGL renderer because it's a handy tool to play with complex graphics architecture and animations in a 2D environment. For better performances, we powered gradient maps and gradients in general using fragment shaders written in GLSL. We also used Facebook Rebound to power all motions with spring-based animations.

How did you tackle ensuring performance and compatibility across browsers and devices?

SR: We quickly realised that there would be a lot of assets to load. And we also knew that the client needed to be able to add new chocolate bars in the CMS.

So we found a way to generate the bars dynamically from a single packaging base texture in greyscale mode combined with a gradient map and static layers (sticker, branding and shadows). This generated texture is made once at runtime and then cached and reused across the experience. The gradient map is performed by a fragment shader that takes as input the base texture, a colour palette (generated by the CMS) and the row index from which it should use the colour information.

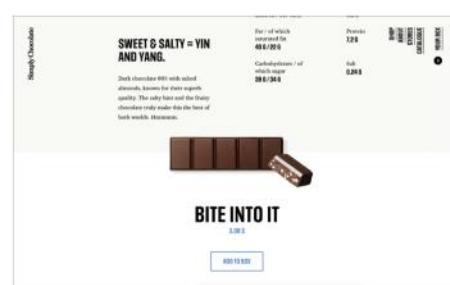
What useful lessons did you learn during this build?

PM: We saved a lot of time by using existing technologies, like PixiJS or Redux. It would have been completely different without them. We tried to find the right balance between what to use from the community and what to build from our own.

We spent some time in the early stages of the process experimenting with different technical solutions. And we came up with really great ideas in collaboration with the design team. It helped a lot to understand each other's expectations, and the technical possibilities we could use. ■



Bespoke design The background changes for each bar, reflecting the tasty ingredients in each



Fun times The text keeps the tone light, striking the perfect balance between fun and selling a product

50

AMAZING DEV TOOLS

2018

Louis Lazaris gets you up to speed with what's hot and new in tools for front-end developers with a wide variety of finds from the past year



Another year has ended and the tooling landscape has become simultaneously more exciting and complex. It seems that every month there's a new post about the convoluted and intimidating nature of the JavaScript tooling ecosystem. There are countless new libraries, frameworks, plugins, build-related tools, and so much more, released every month, each claiming to help you improve your productivity or solve a specific development problem.

AUTHOR

LOUIS LAZARIS

Louis is a front-end developer, writer, author, and speaker. He blogs about code on Impressive Webs and curates Web Tools Weekly (<https://webtoolsweekly.com/>), a newsletter for front-end developers. [@ImpressiveWebs](https://www.impressivewebs.com)

As developers, we're happy to have all these options – but the sheer quantity can be paralysing. And even a single tool can be awkward to get started with due to the steep learning curve and technical prerequisites. So it can be difficult to figure out which tools might be worth a look. To that end, to start the year off right, we've done the legwork for you, weeding through 12 months worth of new releases and updates to bring you a list of 50 of the newest, most practical and exciting options for front-end web coders, designers, and full-stack developers.



HTML & CSS TOOLS

INPUT

<http://input.glitchpack.com>

1 Visual online form builder that makes it super-easy to create responsive forms based on Bootstrap, Materialize, or Foundation. Adds framework-specific HTML classes and you simply download and insert the code into your project.

RUNWAY APP

<https://runwayapp.io>

2 Styleguides are big today but many developers find them tedious to build. This is an online WYSIWYG editor to help you build and host your styleguides. Also has an older version (<https://runway-app.cfapps.io>) that enables you to build your styleguide automatically via custom CSS comments.

CSS GRID TEMPLATE BUILDER

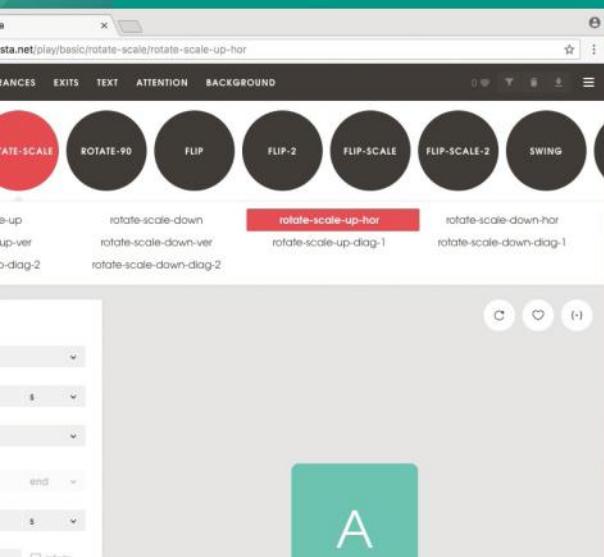
<https://codepen.io/anthonydugois/full/RpYBmy>

3 The CSS Grid Layout spec is gaining popularity and now has excellent browser support. This CodePen demo lets you visually build your grid then copy and paste the generated template string used in your CSS.

ANIMISTA

<http://animista.net>

4 This is a really comprehensive and feature-rich online tool to build CSS animations. There are dozens of options to create custom animations including type of animation, object to animate, duration, timing function etc.



POSTCSS-NORMALIZE

<https://github.com/jonathantneal/postcss-normalize>

5 A useful plugin for the popular and growing CSS processor, PostCSS, which enables you to only use the parts of Normalize.css (the well-known CSS reset alternative) that your project requires. Uses your project's browserlist string to determine which parts of Normalize.css to exclude.

MAVO

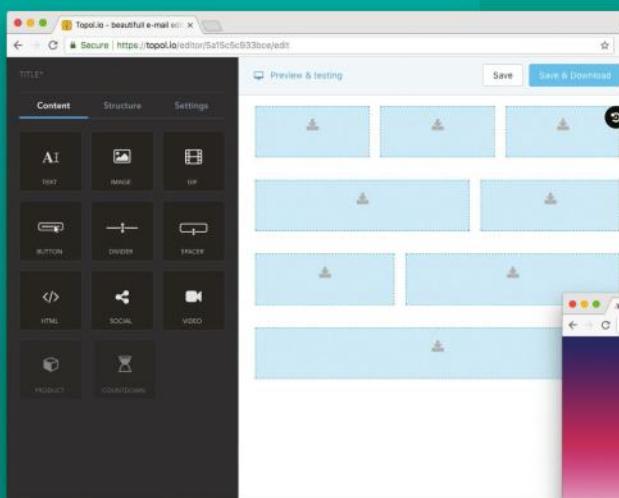
<https://mavo.io>

6 An extension to HTML syntax to build dynamic editable websites with just HTML. Mavo uses special HTML attributes to indicate where data should be stored and which elements on the page are Mavo-enabled.

TOPOL.IO

<https://topol.io>

7 Visual, drag-and-drop HTML email editor to create responsive emails. The editor is easy to use and includes components for just about everything you'd want to include in an email campaign. Smaller components



Left Animista is a powerful online tool with a great selection of options and settings to enable you to build custom CSS animations

Above Topol.io helps you build responsive HTML emails from scratch using a simple drag-and-drop interface or via one of the prebuilt themes

Right Sticky Bits is just the tool to help you in your quest to 'stick' elements to the top (or bottom) of the viewport while the user scrolls

include useful spacers and dividers and you can choose from prebuilt themes.

VIVIFY

<http://vivify.mkcreative.cz>

8 One of the newest drop-in CSS animation libraries, enabling you to add predefined animations to page elements by adding a class name to your HTML. Includes a wide variety of unique – but not overly bombastic – animations you won't find elsewhere.

STICKY BITS

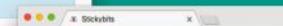
<https://dollarshaveclub.github.io/stickybits>

9 Dependency-free alternative to using CSS's new `position: sticky` feature for making elements 'stick' to the top of the viewport while scrolling. Includes a pixel offset setting as well as the option to stick to the bottom of the viewport.

MULTI.JS

<https://fabianlindfors.se/multijs>

10 Mobile-compatible, user-friendly replacement for ugly and clunky HTML select boxes that use the `multiple` attribute. The user clicks the desired items and they are automatically moved to one side, rather than highlighted. Includes an optional search feature for select boxes with dozens or more options.



StickyBits

Stickybits is a lightweight alternative to `position: sticky` polyfills

SETUP USAGE OPTIONS EXAMPLES GITHUB ISSUES

FEATURES

50 amazing dev tools 2018

Frameworks & Libraries

SVELTE

<https://svelte.technology>

11 This anti-framework attempts to solve the problem of bloated JavaScript libraries that slow down browsers, especially on mobile. Compiling happens during build-time rather than run-time, putting minimal strain on the user experience. See also the accompanying interview.

BUILDING BLOCKS

<https://foundation.zurb.com/building-blocks>

12 From the folks behind the popular Foundation framework, this is a library of front-end UI components that can be plugged into any Foundation project. Ranges from full-featured kits like dashboards and blogs, to smaller components like media elements.

CELL

<https://www.celljs.org>

13 For a really simple alternative to more popular frameworks, this is well worth looking into. Cell doesn't require any environment or complex toolchain and it allows you to build pages using JSON-like structure.

BOJLER

<http://bojler.slicejack.com>

14 Email framework for developing cross-client responsive email templates. Includes components for typography, buttons, hero banners, and more. Also provides utility classes for alignment and spacing – a big need when developing HTML email.

QUASAR FRAMEWORK

<http://quasar-framework.org>

15 Build ES6 and Vue-based responsive websites, Progressive Web Apps, hybrid mobile apps, and Electron apps using this framework and full-fledged toolchain. Includes lots of built-in components, themes, and live reload for preserving app state.

KEEN UI

<https://josephuspaye.github.io/Keen-UI>

16 Lightweight collection of UI components written in Vue and inspired by Material Design. Includes custom form elements, date picker, modal window, loading and progress indicators, tabs component, tooltips, and more.

KUTE.js is a Javascript animation engine with **top performance**, memory efficient & modular code. It delivers a whole bunch of tools to help you create great custom animations.

Above
KUTE.js is a powerful animation tool that specialises in performance – an important factor when developing animations for mobile

Top right
Muuri helps you build custom draggable, sortable, and filterable grid-style layouts

Bottom right
SweetAlert2 replaces the ugly and boring default alert() and confirm() dialogs with something more elegant and functional

Below
Timeline.js is a different kind of carousel plugin, offering a carousel presented as a chronological timeline

... and by passing a parameter, you can execute something else for "Cancel".

Try me!

Are you sure?

Buttons below are styled with Bootstrap classes

Yes, delete it! No, cancel!

cancelled
Your imaginary file is safe :)

13 March. Mustafa Kemal enters War College in Istanbul.

Default

```
$('.timeline-1').Timeline();
```

1881 1883 1893 1895 1896 1897 1898 1899 1902 1905 1906 1907 1908 1909 1910

<JAVASCRIPT TOOLS>

KUTE.JS

<http://thednp.github.io/kute.js>

17 JavaScript animation engine with performance as its primary feature. This one grabs your attention immediately due to the gorgeous and super-smooth animation on the home page. The API looks elegant and well worth trying out.

ACROSS-TABS

<http://engineering.wingify.com/across-tabs>

18 JavaScript library based on HTML5 Cross-document messaging (which has solid browser support), to enable cross-origin communication between browser tabs. Nice API with ability to get info on the tabs and write callbacks.

TIMELINE.JS

<https://ilkeryilmaz.github.io/timelinejs>

19 A jQuery plugin with a twist on the carousel component, for the specific use case of creating a carousel timeline (ie a slider that progresses based on chronological points) with lots of visual and functional customisation options.

WAYPOINTS

<http://imakewebthings.com/waypoints>

20 Scrolling animations and interactions are in demand in many layouts today. This library, available for jQuery, Zepto, or in vanilla JavaScript, is the easiest way to trigger a function when you scroll to an element on the page.

SWEETALERT2

<https://limonte.github.io/sweetalert2>

21 Fork of the original SweetAlert, this is a replacement for native JavaScript popups like `alert()` and `confirm()`. The modals are attractive, responsive, customisable, and accessible.

MUURI

<https://haltu.github.io/muuri>

22 JavaScript API for responsive, sortable, filterable, and drag-and-drop Masonry/Packery-style grid layouts. The demos are really nice and there are lots of options available to customise the grid for different layout types.

SIEMA

<https://pawelgrzybek.com/siema>

23 Lightweight carousel plugin with no styling, so you can easily integrate it to match your brand's needs. Includes some easy to use optional settings and has dragging and touch-enabled swiping.

PROGRESSIVELY

<https://thinker3197.github.io/progressively>

24 New option for a lazy-load library for progressive loading of images as a user scrolls. Offers a throttle setting for improving performance, image load delay, and callback functions.

INFINITE SCROLL

<https://infinite-scroll.com>

25 Unlike most of the rest of this list, this is an old tool but it's been rewritten for version 3. New version includes URL changes while scrolling, no jQuery dependency, and lots of optional settings via a clean API.

PUSH

<https://pushjs.org>

26 Library to implement cross-browser Push Notifications (which are still not widely supported). Some browsers use older versions of the spec, or the Notifications API instead of Push, which this library attempts to normalise.

DRAGGABLE

<https://shopify.github.io/draggable>

27 Drag-and-drop library that abstracts native browser events into a comprehensive

INTERVIEW

Svelte (<https://svelte.technology>)

is one of the more interesting new UI frameworks.

Rich Harris, a graphics editor on the *New York Times'* investigations team, is the creator of Svelte. We asked him a few questions to see why it might be an option for developers in 2018.



What does it mean that Svelte is the "magical disappearing UI framework"?

Svelte solves the same problems as tools like React, Vue, Angular and so on, but it does so in a radically different way: it takes your single-file components, written in HTML, CSS and JavaScript, and compiles them to tightly optimised code with no runtime framework dependency. You get all the advantages of a component-oriented, state-driven approach, but with zero bloat.

What advantages does Svelte offer over frameworks like React and Vue?

Apps built with Svelte are faster and use less memory. Tools based on React-style virtual DOM diffing can't compete with a compiler. And whereas many frameworks pursue minimalism at all costs – which really entails abdicating responsibility for important design decisions – Svelte, as a compiler, makes no such sacrifices. It's extremely powerful.

You recently wrote about the problems with CSS and the explosion of CSS-in-JS solutions (<https://svelte.technology/blog/the-zen-of-just-writing-css>). Why do you feel Svelte is superior in this area?

CSS-in-JS solves important problems, but introduces many of its own. We can fix those problems without abandoning CSS – which you still have to learn anyway, and which text editors are very good at helping you write. With Svelte, you write normal CSS, and you get scoping (no leaking styles, no cascade unpredictability), unused style removal, sourcemaps, minification and more, completely automatically.

"If you're writing React, you have access to a more powerful styling construct than CSS class names. You have components."

- Michael Chan, @chantastic



CSS IN JS = A GOOD THING?

In this list of 50 tools we included one called CSS in JS Playground (<https://css-in-js-playground.com>), which lets you fiddle around with most, if not all, of the CSS-in-JavaScript solutions available today. Many long-time CSS developers will tend to shy away from using these libraries because they go against the long-held tenet called Separation of Concerns.

However, those building and using these libraries make a strong case for why these are beneficial to large-scale development. For example, in his talk at React Amsterdam (<https://www.youtube.com/watch?v=bIK2NwoK9xk>), Max Stoiber explains that developers should be thinking in terms of components, not documents.

This helps solve problems that are inherent in CSS as a language, which amounts to using only the good parts of CSS and discarding the bad parts. These include global styles, styles that are no longer in use, and add-to-bottom stylesheets where developers are afraid to touch old CSS because they don't know what it will break.

The CSS-in-JavaScript solutions attempt to solve these problems by keeping all styles for a single component tied to the component, more or less reversing the Separation of Concerns principle. The thinking is: You're already using JavaScript heavily with libraries like React and Vue; why not take full advantage of the component nature of these tools and apply the same principles to styling as well?

If you're curious, some of the popular CSS-in-JS solutions are:

- styled-components (<https://www.styled-components.com>)
- glamorous (<https://glamorous.rocks>)
- JSS (<http://cssinjs.org>)
- Radium (<http://formidable.com/open-source/radium>)
- Styletron (<http://styletron.js.org>)

API to help build a custom drag-and-drop experience. Includes modules for Sortable (to reorder elements), Droppable (define where items can be dropped), and Swappable (for swapping elements).

HYPERFORM

<https://hyperform.js.org>

28 Complete implementation of HTML5's native form validation API in JavaScript. Replaces or polyfills the

browser's native methods and makes it easier to validate forms using custom events and hooks.

SENTINELJS

<https://github.com/micss/sentineljs>

29 A neat utility that uses CSS selectors to detect new DOM nodes. For example, when a specific type of element is added to the DOM (eg `<section>` element), you can customise that element as soon as it's added.

<REACT TOOLS>

REACT DATASHEET

<https://nadbm.github.io/react-datasheet>

30 Excel-like spreadsheet component you can integrate into your React apps. Includes the ability to add formulas when a cell is edited (based on math.js) and the ability to add components like drop-down lists and buttons into the cells.

REACT NATIVE FOR WEB

<https://github.com/necolas/react-native-web>

31 Brings the platform-agnostic components and APIs of React Native to the web. Components include activity indicators, buttons, progress bars, toggle switches, scrollable views, and much more.

REACTIDE

<http://reactide.io>

32 Described as "the first dedicated IDE for React web application

development," this is a cross-platform desktop app to quickly render projects with no build or server configuration, reducing the complexity of building React apps.

REACT STUDIO

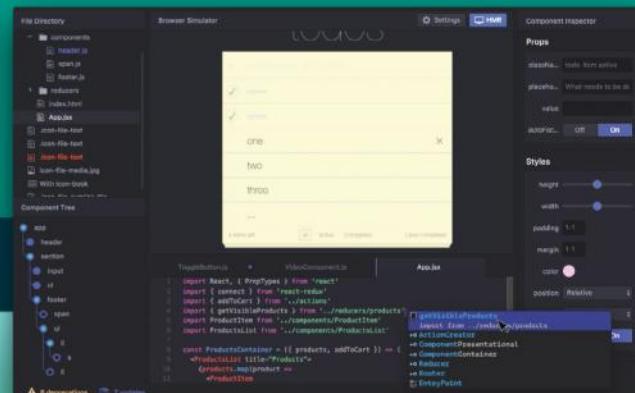
<https://reactstudio.com>

33 A really gutsy project, this is a visual design tool that outputs clean, high-quality React projects, without coding. You can draw graphics or import from Sketch and build React components based on the designs. Worth looking into for non-coders.

ORY EDITOR

<https://github.com/ory/editor>

34 React- and Redux-based mobile-friendly content editor that you can plug into your site for rich content editing. Originally built for a large open education platform in Germany, so the component is robust and easy to use.



Left Reactide is a cross-platform native desktop IDE that helps reduce the complexity of building React apps

«TESTING & CODING TOOLS»

CODESANDBOX

<https://codesandbox.io>

35 Online code editor to build web apps in React, Vue, Preact, and Svelte. The interface includes a split view, Prettify, GitHub integration, and a dependency management panel to add npm packages.

CSS IN JS PLAYGROUND

<https://css-in-js-playground.com>

36 The CSS-in-JavaScript thing is pretty hot right now. This playground enables you to examine and experiment with the code for various CSS-in-JS libraries live in your browser. For specific library options, see the accompanying box.

PWABUILDER

<http://www.pwabuilder.com/generator>

37 Progressive Web Apps (PWAs) are a huge part of what is helping the web to compete with mobile. This online tool helps you put together the different parts of a PWA, including the Web Manifest and Service Worker.

MYJSON

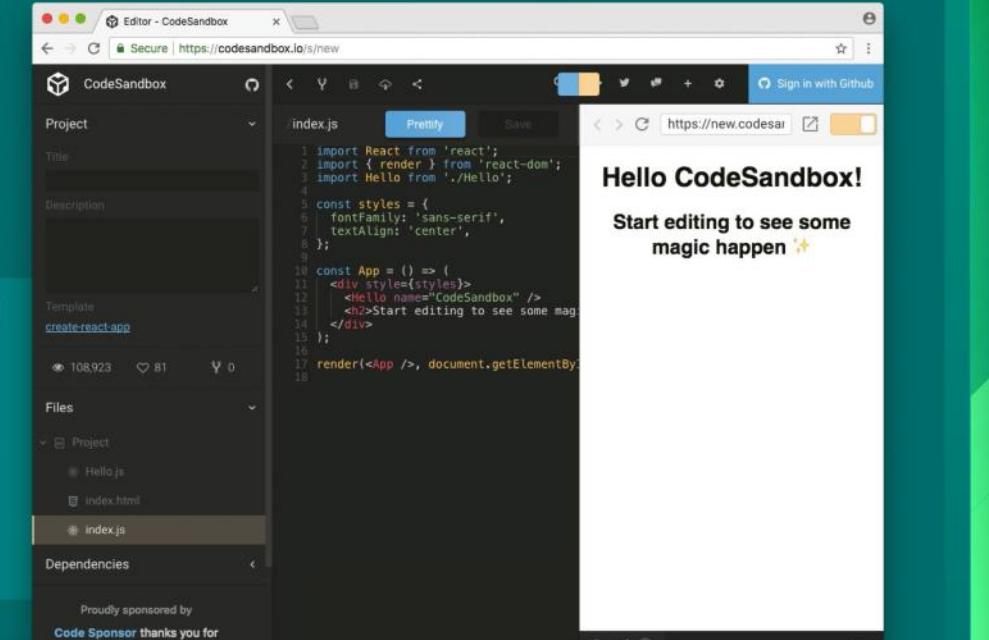
<http://myjson.com>

38 A simple JSON store for your app that offers a CORS-enabled and SSL-supported API. Has the ability to generate a URL with your custom JSON data, or you can save the JSON to a page on the Myjson server via the website.

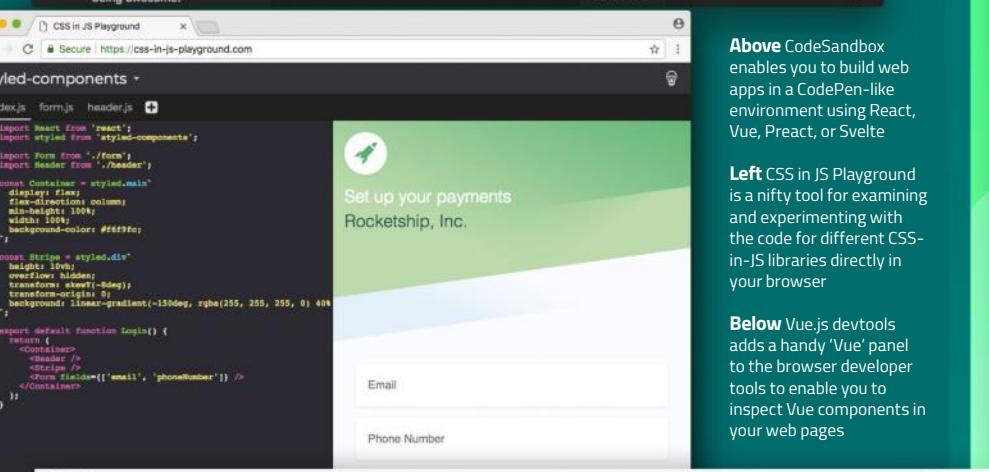
VUE.JS DEVTOOLS

<https://chrome.google.com/webstore/detail/vuejs-devtools/nhdogjmejiglipccpnnaanhbleajbpd>

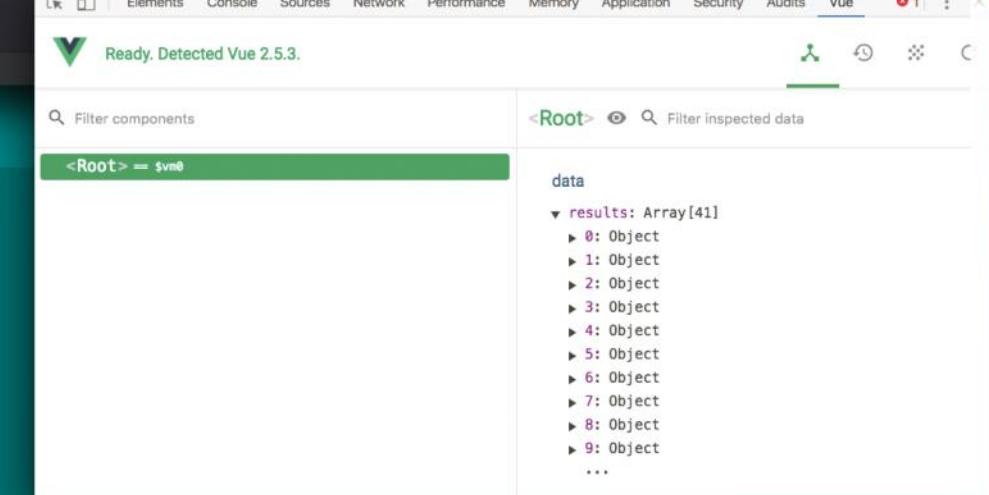
39 This Chrome or Firefox extension adds a ‘Vue’ panel to your browser’s developer tools to assist you in debugging pages and apps built with Vue.js, the popular JavaScript UI framework.



Above CodeSandbox enables you to build web apps in a CodePen-like environment using React, Vue, Preact, or Svelte



Below CSS in JS Playground is a nifty tool for examining and experimenting with the code for different CSS-in-JS libraries directly in your browser



Below Vue.js devtools adds a handy ‘Vue’ panel to the browser developer tools to enable you to inspect Vue components in your web pages

FEATURES

50 amazing dev tools 2018

GITHUB FOR ATOM

<https://github.atom.io>

 Atom, the popular code editor, now has Git and GitHub integration available via this package. Enables you to work with branches, staging, commits, deal with conflicts, and more. The package is bundled with Atom 1.18 and up.

OCTOBOX

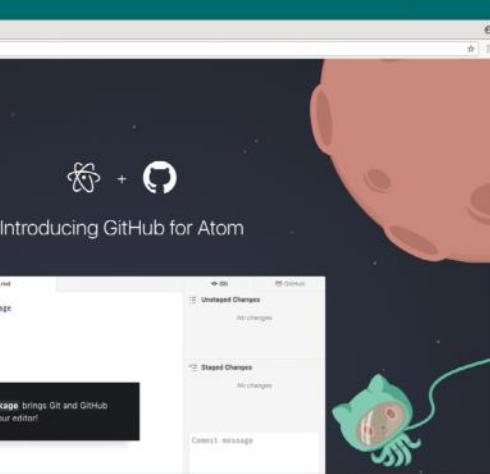
<https://octobox.io>

 GitHub notifications aren't useful, especially if you manage multiple projects. Octobox corrects some of the weaknesses inherent in GitHub's notification system by using repo activity for archiving and unarchiving of the notifications.

NETLIFY CMS

<https://www.netlifycms.org>

 CMS for static sites, which seems to be all the rage right now. Enables collaborators to create, edit, review, and publish content without



Above GitHub for Atom is a useful tool that provides Git and GitHub integration for, you guessed it, Atom

Right Lighthouse is an automated tool that enables you to test public or private sites for quality issues like performance and accessibility

writing code or dealing with version control. The React-based core acts as a wrapper for Git.

TERMINUS

<https://eugeniy.github.io/terminus>

 Native terminal app available for Windows, Mac, or Linux with theme and colour scheme options, configurable hotkeys, and lots more. "Designed for people who need to get things done".

LIGHTHOUSE

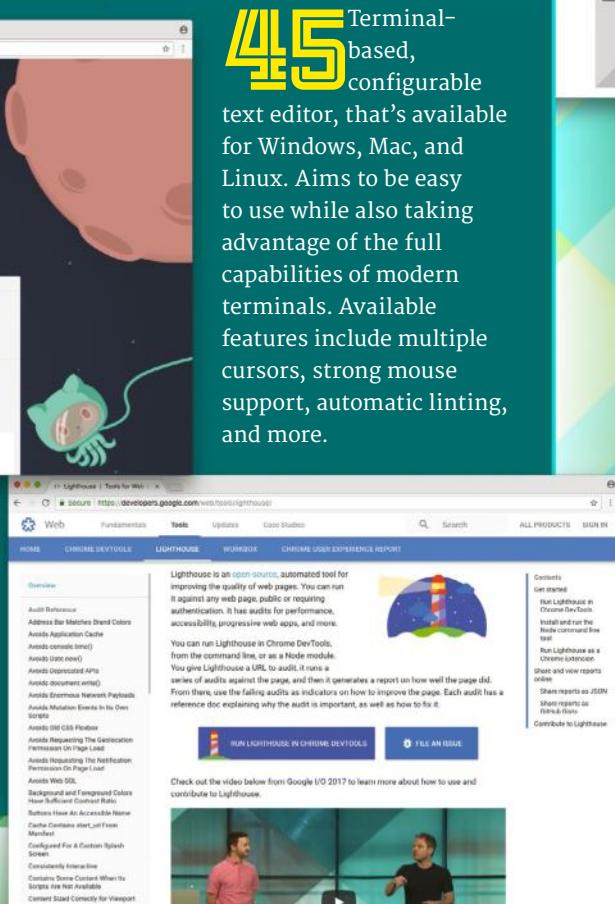
<https://developers.google.com/web/tools/lighthouse>

 Google's automated tool for analysing page quality. Enables you to test public or password-protected sites for performance, accessibility, and Progressive Web Apps. View your reports online, share them in JSON format, or as GitHub Gists using Lighthouse Report Viewer.

MICRO

<https://micro-editor.github.io>

 Terminal-based, configurable text editor, that's available for Windows, Mac, and Linux. Aims to be easy to use while also taking advantage of the full capabilities of modern terminals. Available features include multiple cursors, strong mouse support, automatic linting, and more.



RESOURCES

If this list of 50 tools isn't enough for you, or if you just want to keep up with what's new in 2018, here are four good resources to check out.

Web Tools Weekly

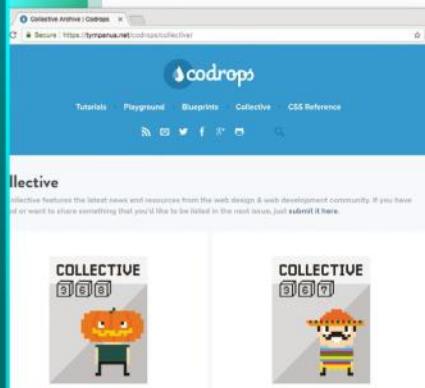
<https://webtoolsweekly.com>

A weekly newsletter for front-end developers. Each week includes a quick coding tip followed by a categorised list of tools, covering JavaScript, CSS, React, SVG, Web APIs, frameworks, libraries, build tools, databases, and more.

Cooperpress Newsletters

<https://cooperpress.com/publications/>

The Cooperpress publications are a great source of news on tools and technologies from front-end to mobile and everything in between.



Left The Codrops Collective is a great resource for keeping up with what's new in design and front-end development

Codrops Collective

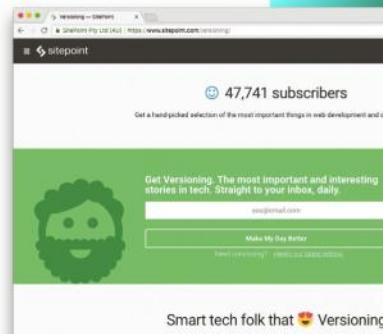
<https://tympanus.net/codrops/collective/>

In addition to the beautiful tutorials on the Codrops website, the Collective is a must-read resource for designers and front-end developers, with lots of new tools featured regularly.

Versioning

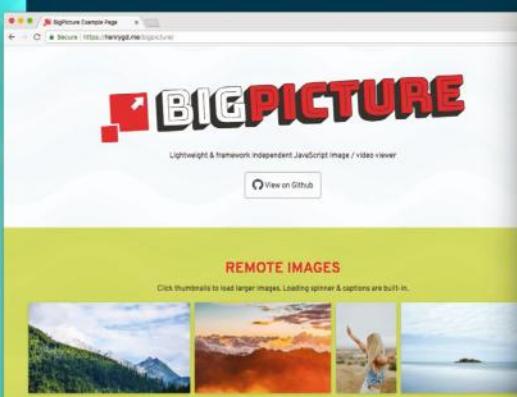
<https://www.sitepoint.com/versioning/>

A daily newsletter by Adam Roberts of SitePoint. Each issue is stacked with links to coding tutorials, new tools, and any tech-related news.



Above Get your daily fix of coding and general tech news by signing up to the Versioning newsletter

〈MEDIA TOOLS〉



BIGPICTURE

<https://henrygd.me/bigpicture>

46 JavaScript-based lightbox designed for images and video, with built-in loading indicator and captions. Supports YouTube, Vimeo, and direct HTML5 video. Includes error handling for times when a media item doesn't load.

PASITION

<https://alloyteam.github.io/pasition>

47 Path transition/animation library with a clean API using minimal JavaScript. Can render your shapes to Canvas, SVG, or WebGL and has support for all SVG path commands (moveto, lineto, etc.).

FEATHER

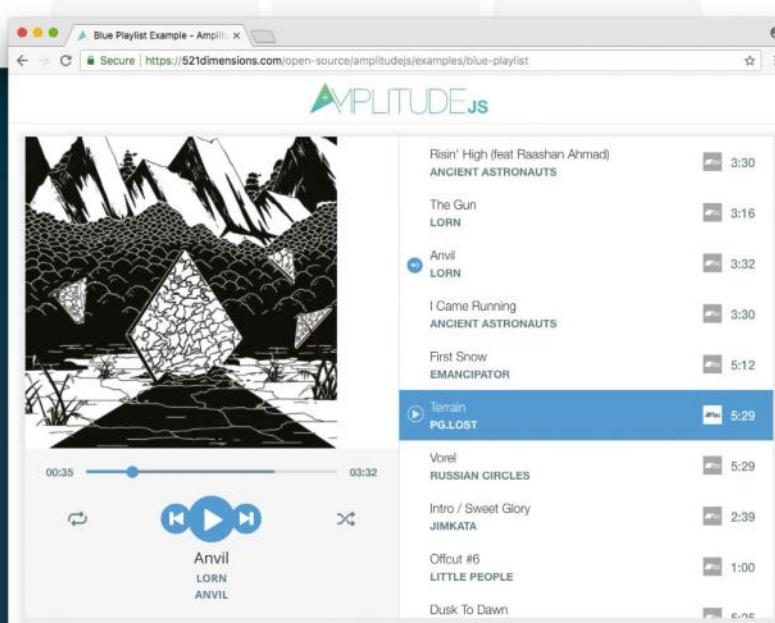
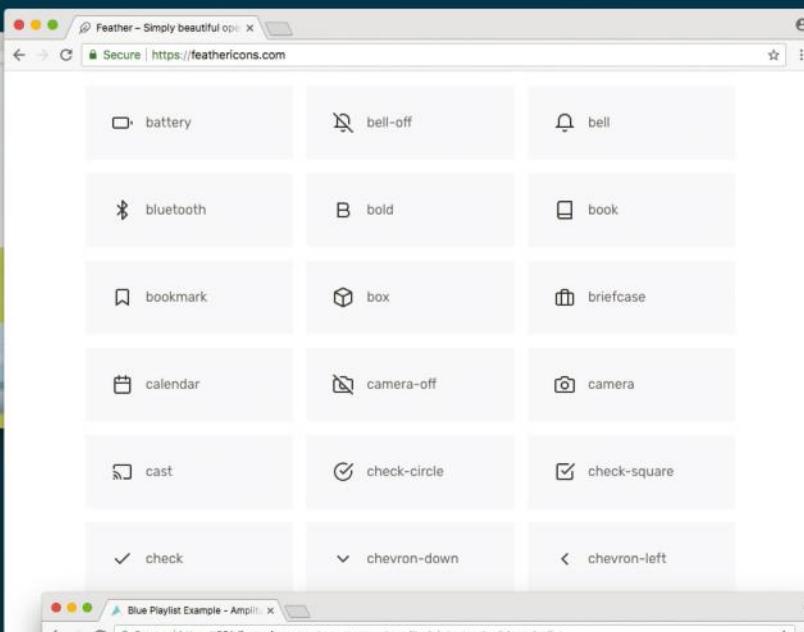
<https://feathericons.com>

48 Beautiful, simple, and extensive set of open-source icons in SVG format. Includes options for pretty much any navigation element or UI widget.

AMPLITUDEJS

<https://521dimensions.com/open-source/amplitudejs>

49 Modern JavaScript HTML5 audio player that enables 100% design control, playlist features, callback functions, events, and live stream capabilities. The examples page is worth checking out to see the player's design and functional flexibility.



SVGI

<https://angelmmiguel.github.io/svgi>

50 Command-line based SVG inspection tool that inspects the content of SVG files.

Provides information about the file, the elements in the SVG and hierarchy. Can be integrated into a project as a dependency to examine SVG in scripts.

That's it for this year's list of amazing tools. This really only scratches the

Far left
Big Picture is a JavaScript lightbox for video and images

Top
Whatever your interface needs, you'll be able to find just the right icon in Feather, a simple and attractive SVG-based icon set

Left
AmplitudeJS is a powerful, flexible, and customisable HTML5 audio player for the modern web

surface of what's available in the complex tooling ecosystem, but we hope this variety of practical options will be of help. We're sure there's at least one thing in this list you'll personally be able to experiment with, use in your next project, or even contribute to (many are open-source!). So don't get too intimidated with how much is out there. Build stuff and use only the tools that help you be more productive and solve your development problems. Happy coding in 2018!

PROTOTYPING AT NETFLIX

Illustration by Neo Phoenix

David Aragon takes us behind the scenes at Netflix, to discover how the company uses prototyping to ensure it delivers the best service it can

When you browse for something to watch on Netflix, the first thing you see is a colourful grid of box art. Imagine, for a moment, that your job is to pick these images for each title on Netflix. Would you pick full cast photos, or maybe close-ups of the main stars?

At Netflix, we answer this question through A/B testing. When a title launches, we create six different styles of box art. After a few weeks, the image that causes the most users to watch that title becomes its final, single box art image. This same process happens independently in each country to account for cultural differences.

Usually, my favourite of the six candidate images for a title is not the one that real members ultimately pick. If it were my job to hand-pick these assets, my batting average would be low. As designers, we frequently ask ourselves these same questions: which of our

designs should move to the next round, and which should we toss out?

Image testing has taught me that I can't rely on my intuition to answer these questions. Rather than trust my gut, I rely on prototyping and user testing to help me pick my very best ideas.

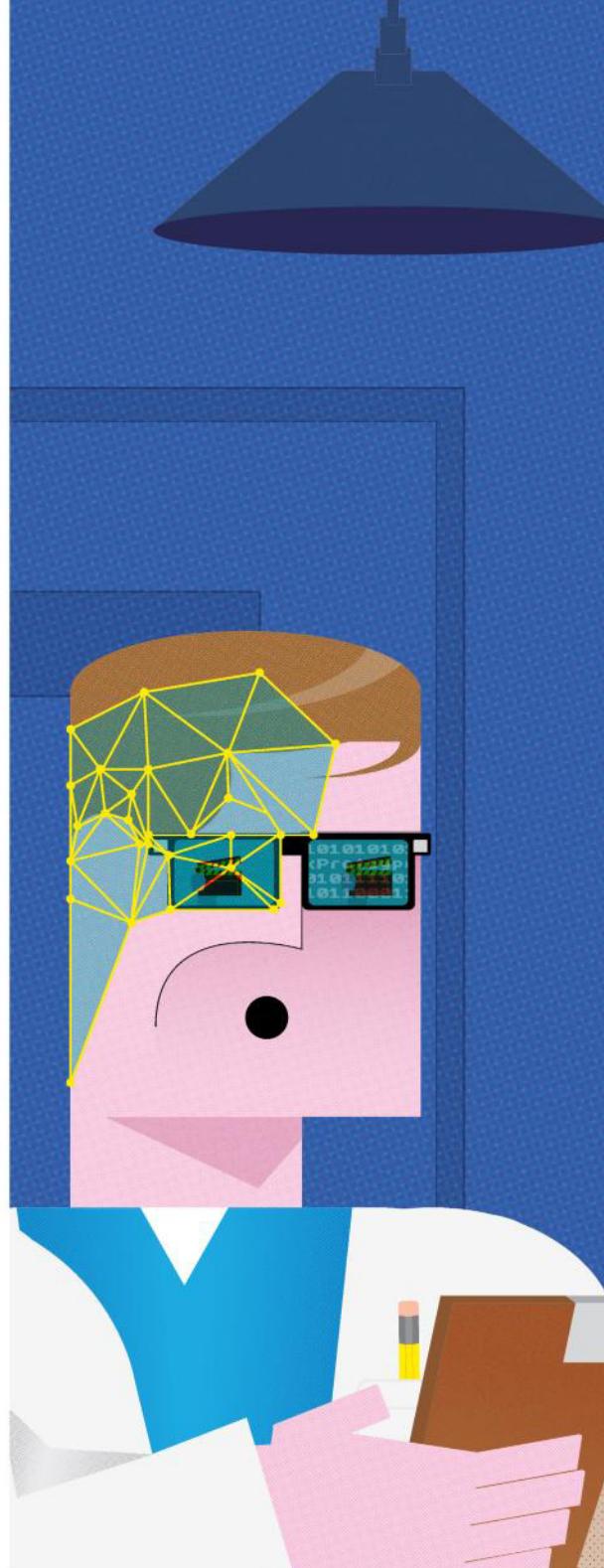
The role of prototyping

At Netflix, my official job title is Prototyper. I build prototypes early in the design phase of projects to quickly validate and invalidate ideas.

This helps designers understand how their designs hold up with real user interaction and real content. We then take these prototypes to research sessions so we can see how real people interact with the design, before we spend time and money to build it at scale.

Let's first clarify what a prototype is. I define it as a piece of software that simulates a full application, and is optimised for rapid change and iteration. A prototype fleshes out an idea so you can experience it for real, instead of just looking at it as a flat Photoshop file.

Prototyping helps you to sniff out the weaknesses in your design that aren't apparent in static comps. Without prototyping, you end up finding interaction problems in the production build, instead of way back at the design phase.



AUTHOR

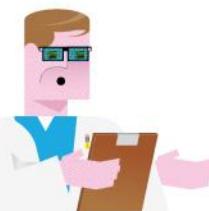
DAVID ARAGON

David is a software engineer and product designer. As a prototyper at Netflix, he brings early concepts to life with high-fidelity, fully interactive prototypes. Before going to Netflix, David worked as a full-stack web developer.

@davidmaragon

Prototyping at Netflix





A spectrum of prototyping tools

As designers and engineers, we're lucky to have so many tools at our disposal to build prototypes. Choosing which one to use really depends on the problem at hand. I find that most prototyping software falls on a spectrum, with static tools at one end and fully interactive tools at the other.

At one pole of this spectrum, we have static design tools like Sketch and Photoshop. They're great for getting an idea off the ground and validating the basic information hierarchy of a design. You may not consider these to be prototyping tools, but compared to napkin doodles or ideas in your head, they do help simulate a full application, and in that way they are prototypes.

Next in our prototyping spectrum we have motion design tools like Adobe After Effects. Here, you can start to show how a user moves through your app, and demonstrate how an application responds to user interaction.

Whereas the previous static crop of tools showed the visual layout of your design, motion tools demonstrate the interactions and transitions that guide your users. This is helpful, but is limited in that you're still guessing how a user would interact. Highlighting a pathway through the app shows your motion principles, but it does not prove that a real user will understand what's going on or how to navigate.

Next up are interactive prototyping tools like Principle and Adobe XD. These are purpose-built applications that let you add user-initiated interaction to your designs. With these tools you can add 'hot zones' to your designs that listen for clicks or touches and respond

in a way you define. For example, if I'm prototyping a navigation system, I can tell each tab to simply show or hide its content when clicked. This is all done in a visual manner similar to designing in Sketch. You don't need to know how to code to make your designs interactive with these tools, so they are powerful for any designer.

Finally, at the fully interactive end of the spectrum are HTML, CSS, JavaScript, and other programming languages. Because these are the same tools used to create your production application, there are no limits on how rich or interactive your prototype can be. The obvious downside is that it can be difficult and time-consuming to learn to program at the code level. However, if you are



Most prototyping software falls on a spectrum, with static tools at one end and fully interactive tools at the other

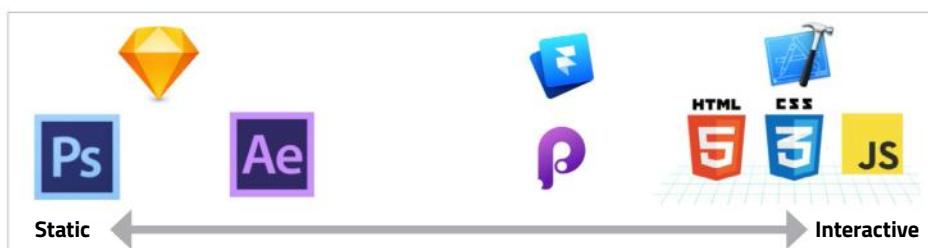
an engineer or work closely with one, prototyping your designs early in their production environments is illuminating. You get an early peek at how smooth or rough animations are, and you can catch usability pitfalls by observing real users interacting with your prototype.

This last group is where I spend most of my time. My specific stack of choice is React, Sass, and Webpack. I find that React's component-based architecture is great for prototyping because it keeps features isolated, and lets me reuse building blocks from project to project. There's one inevitable question when looking at this full spectrum: which

prototyping tool should I use? The answer depends on what you intend to learn from your prototype. Static prototyping tools (Sketch, Photoshop, After Effects) aid in design iterations and conceptualizing. They're great for getting an idea off the ground and getting a quick read on your basic premise. Interactive, high-fidelity tools like Adobe XD and Principle are a good choice when it's time for user testing. They will help you judge usability, navigation, and a user's holistic understanding of your app.

In-person user testing

Once you have a prototype built, the real fun of user testing begins. At Netflix we have three main tiers of in-person user testing. The first, most informal method is to literally pull colleagues from the lunch room and watch them use our prototypes. It sounds contrived, but it's a great way to get a quick read on usability and understanding. It helps if you can find people who are not on your immediate team, and are not design experts themselves.



Above Prototyping tools fall along a spectrum of static to interactive – this chart represents the big players

Prototyping at Netflix



Above Netflix A/B tests its box art for each title. Often, the winning image is different from country to country

Right Designers constantly question which UI to discard and which to ship. Prototyping and user testing helps make this decision

Below Software like Principle and Adobe XD make it easy to add interactivity to formerly static comps



CASE STUDY

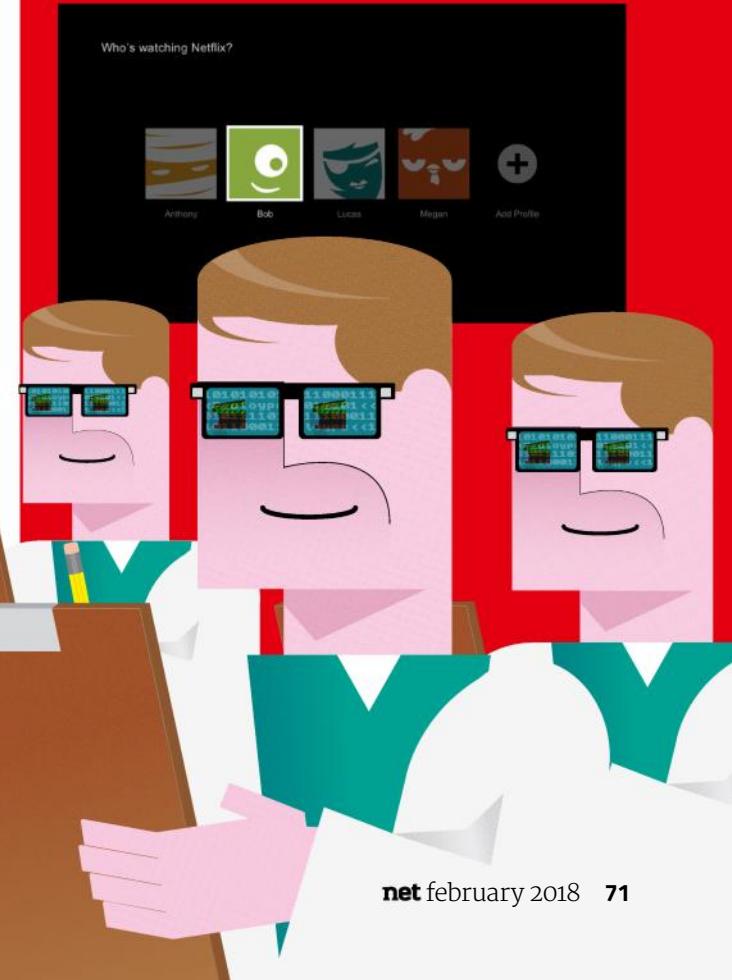
The concept of profiles on Netflix seems like a no-brainer now, but when we debuted them a few years ago we had to educate users about their value. To determine how best to do this, we built several prototypes of the profile creation flow and brought them to user testing sessions.

Our first prototype was a basic form with header copy that asked, "will anyone be sharing this account?". When we watched users try this prototype, they were immediately distrustful of our motives, and were reluctant to fill out the form. This clarified two things for us: first, the header copy made it seem like we were policing their account, instead of offering them a great new feature. Second, we didn't explain why profiles would improve their Netflix experience. We assumed that the value was obvious.

For our next iteration, we softened the copy and added fun profile icons. Through user testing we found that these immediately implied personalisation, and therefore relieved concern that we were trying to police their account.

The last observation we made was that users were not clicking the Add Profile button to create more profiles for their account, even when they had a five-person household that could benefit from this feature. We made a quick modification to the prototype – we simply showed all five profile fields up front, not hidden behind an Add Profile button – and we immediately saw that users were more likely to start filling out all five profile fields.

Two screenshots of prototyping software. The left screenshot shows the Principle interface with a watch design. The right screenshot shows the Adobe XD interface with a mobile phone design. Both screens show a timeline and various design tools.





► Another type of user testing also takes place in our office, but for these sessions we recruit participants from around the local area. These are not Netflix employees or even necessarily Netflix members, so their feedback is more aligned with our user base. Designers interview users directly at these sessions, and observe them using our prototypes. From this we're able to identify interactions and visual designs that are confusing, and iterate to fix them.

Finally, we have formal research trips where we travel to professional research facilities all over the country and the world. You may have seen this on TV – picture a one-way mirror with an interview taking place on one side, and a group of designers observing from the other. For these sessions we recruit participants based on the project. If it's a kids' prototype, we'll invite kids and families. If it's a sign-up flow, we'll reach out to people who don't yet have Netflix. This lets us observe a targeted audience using the prototype, so that we can get a sense of how these types of users will interact with the real final product.

Prototypes power all of these user testing sessions; we quickly build out an MVP, observe its strong and weak points

We build out an MVP, observe its strong and weak points through user testing, make changes, then repeat the process

through user testing, make changes, then repeat the process.

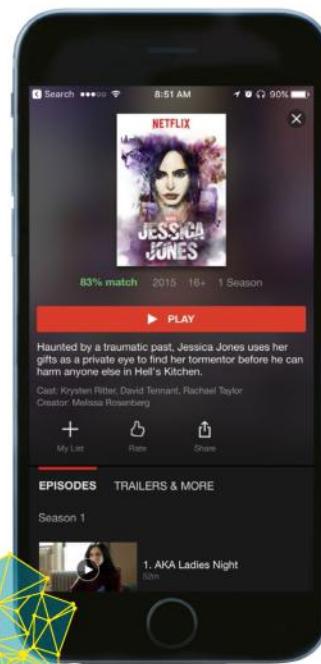
Build your own prototypes

When you're building prototypes, you need a different skill set than when you're building end-user software. The goals are different in each scenario. With end-user software, you have to worry about thousands of people simultaneously using your application in tons of different contexts. But with a prototype, you're interviewing one person at a time about a narrow portion of the full UI. The first

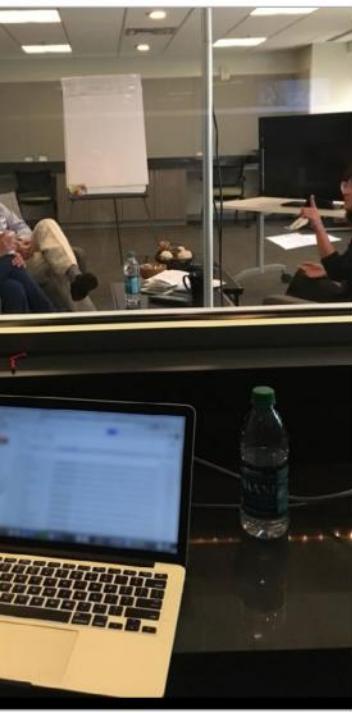
thing to remember is that a prototype does not need to be a fully functional app. If I'm prototyping a new sign-up flow, I don't need to spend time building a working Netflix video player. That's

not part of the interaction I'm focused on, so it doesn't need to be in the prototype.

You can also 'cheat' on features that won't impact how a user interacts with the prototype. In the sign-up flow example, I don't need to actually make the sign-up API calls. The point of the prototype is not to test out the health of the API, it's to study a user's interaction



Left This prototype helped us understand what users thought of the new percentage rating design. The buttons weren't wired up, as they weren't part of the question



Far left Real Netflix users come by the office in Los Gatos, California every other week to try out prototypes and then give feedback

Middle top It's valuable to observe someone using your prototype. They'll often find usability issues that you somehow managed to miss

Middle bottom An easy way to get feedback on a prototype is to simply pull coworkers out from the lunch room

Left For more in-depth research, we travel to professional research facilities where we can hand-pick our test users

Right The Netflix interface is the result of comprehensive in-person and quantitative user testing

with the interface. So stubbing those methods is perfectly sufficient.

As a prototyper I'm optimising for different situations than my counterparts who are building the real app. When I put a prototype in front of a user, I can control variables: browser choice, connection speed, zoom level, etc. I don't need to spend time dealing with these pain points in a prototype, whereas in the final app, those are valid concerns that need attention.

What I am optimising for in a prototype is rapid iteration. The point of prototyping and user testing is to identify weaknesses and iterate, so your app should be nimble and responsive



to change. For me, this means ensuring that all of my UI components have easily-modifiable properties at the top of each file. It means that components are not tightly coupled, since one might get cut at any time. It also means that my top-level architecture is not prescriptive about layout or ordering, since we commonly shuffle and remove pieces of the UI during the design process.

I also optimise my prototypes for customisation, so we can make it feel real for each user we interview. The closer your prototype feels to the real thing, the

better the feedback will be (this doesn't mean everything has to be functional behind the scenes, it just has to appear so to the user). I always include a 'prototype launcher' screen where we can input the test user's name and other info, so the prototype appears personalised just like the Netflix they use at home. This way the prototype feels more comfortable and familiar, so the user isn't distracted and their feedback is more actionable.

Takeaways

Prototyping is a great way to suss out both the strong and weak points in your design. Watching real people use your prototypes, even if they are just colleagues from the lunch room, gets you surprising and valuable takeaways. Tools like Adobe XD and Principle make it easy for designers to add interactivity to static comps, but if you do build from scratch with code, remember that a prototype doesn't need to be a fully functional app in order to be valuable. ■



Above Make it easy to customise the prototype for your test user. This makes the experience more real and the feedback more actionable

RESOURCES

It's an embarrassment of riches for designers in 2017. Just a few years ago, our tools were limited to a handful of Adobe products shared by designers with vastly different goals and workflows. While Photoshop is still the best photo editor, it was never intended as prototyping software. Now, we have multiple purpose-built tools made specifically for iterating on interaction design.

If you need complete end-to-end control of your prototype, then the best route is to build it with code. But if your interactions are straightforward, or your goal is to gut-check your app's flow, you'll be pleased to hear there are great modern tools at your disposal. Here are some that I recommend.

Sketch

<https://www.sketchapp.com/>

Still using Photoshop for wireframes? Put the photo editor down and try out Sketch instead. It's purposely built for web designers and is infinitely quicker when it comes to the art of prototyping.

Principle

<http://principleformac.com/>

Principle looks a lot like Sketch, but it includes a suite of features that adds interactivity to your static comps. The perfect choice if you've wanted to try playing with animated interfaces.

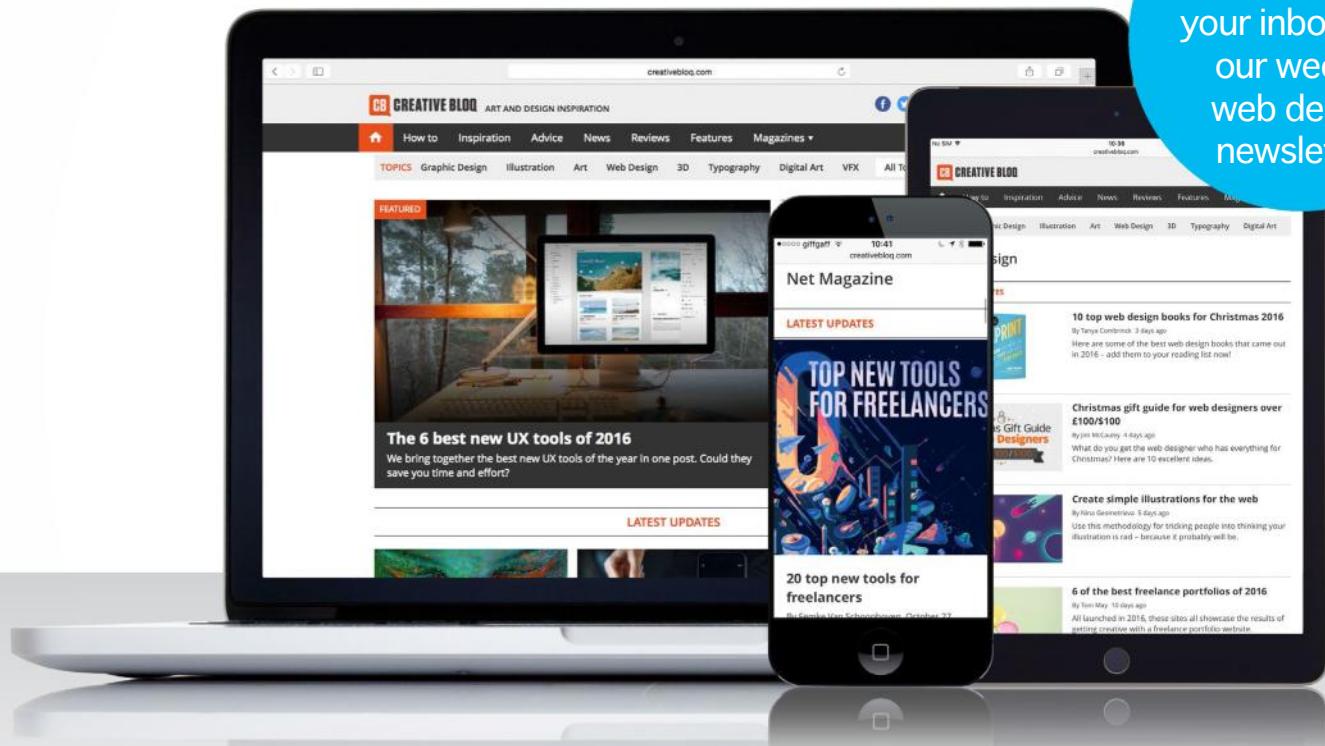
Adobe XD

<http://www.adobe.com/products/xd.html>

Adobe XD is one of the newer prototyping tools on the market. It enables design and interaction prototyping, and is available for PC users, unlike Sketch and Principle.

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THIS MONTH FEATURING...



BUILD A CUSTOM BOT WITH BOT FRAMEWORK

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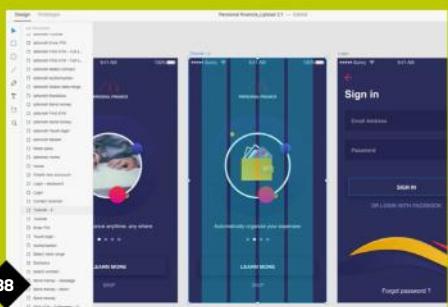
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conversational UI[View source](#)[files here!](#)

All the files you need for this
tutorial can be found at
<http://netm.ag/302-chatbot-files>



* MICROSOFT BOT FRAMEWORK

BUILD A CUSTOM BOT WITH BOT FRAMEWORK

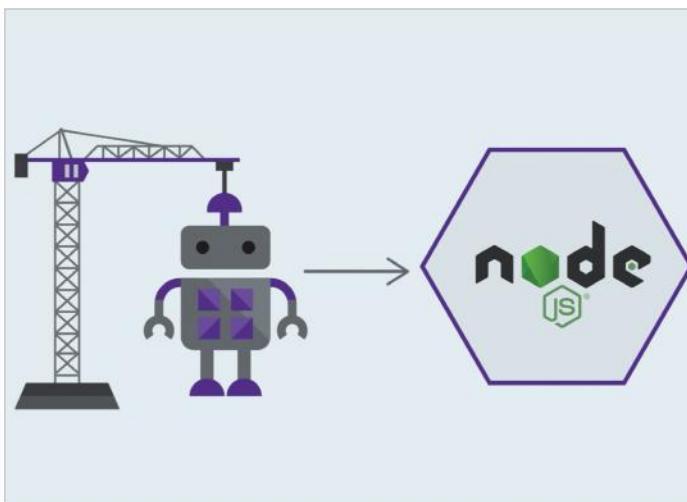
Wez Maynard shows us how to combine Microsoft's bot builder platform and Node.js to create channel-agnostic conversational UI

There's no denying that the chatbot revolution is in full flow. Companies are finally realising that conversational UI can be a tangible part of their marketing strategy and, most importantly, that it can have a positive effect on their bottom line.

What's really clear, though, is that this particular revolution is actually slowly crawling on its belly, rather than exploding in the way the digital media would have us believe. Quick to the market, bot builders have given users the tools to have a bot up and running in no time, but before most considered the how, they completely missed the why. As a quick addendum I want to make it clear I have nothing against bot builders – if you're looking for a Messenger-only solution with an easy-to-use (non-code) interface, I can thoroughly recommend The Bot Platform (<https://thebotplatform.com>).

A good bot strategy, for me, means engaging with your users where they are (not forcing them to move to your platform of choice) and keeping the experience uniquely personal to them. Microsoft's Bot Framework (<https://dev.botframework.com>) is a great way to begin building bots because you can publish to channels like Cortana, Skype, Slack, Facebook Messenger or even directly to your website without having to update any code. A whole raft of easily deployable cognitive service-based APIs (premium versions of these do come with associated costs) means that real machine learning is possible with minimum hassle.

The Bot Framework offers a variety of ways to develop your bot. At present, you can build with C#, Node.js or REST and Direct Line. For the purposes of this tutorial, I'll be using Node.js combined with



Azure's Bot Service – which I'll use to test, host and deploy my bot.

LET'S GET STARTED

The first thing you'll need to do is sign up to Microsoft Azure so you can use the Bot Service. This can be done by visiting the Azure website (<https://azure.microsoft.com>) and signing up for a free 30-day trial. How you host a bot is up to you, but Azure has some options for scaling up and down, especially its consumption model. Azure also has a purpose-built element for fast tracking your bot development; the Bot Service.

1. Once you've signed up for your account, log in to Azure and then hit New in the menu. The Azure service marketplace will open up, where you need to select the Data + Analytics category and then choose Bot Service.
2. You'll then be prompted to name your bot (or app as it's called at this point), pick your subscription, resource group (Create New is fine) and then finish up by picking the hosting plan (choose Consumption) and location.
3. At this point Azure will take a few minutes to set up your bot. You'll know when everything's ready via the notifications inspector (bell icon in the top right of the screen). The message will change from Deployment Started to Deployment Succeeded. Once you see Deployment Succeeded, follow the 'Go to resource link' prompt.

INTEGRATE WITH AZURE

Once on the resource page, you'll be asked to select your programming language and starting bot template. I've chosen NodeJS and the Basic template to get us started. On the next screen we need to

create a Microsoft App ID. This ID will enable our Azure-hosted bot to authenticate with the Bot Framework and extension services like LUIS. When creating an App ID, you'll be taken to a new browser tab where you'll need to generate an app password. Copy and store the password (screengrab the rest for your files) and hit OK. At this point you can hit Finish and go back to Bot Framework.

Back into Azure, the App ID field should be auto-populated. Paste in your App ID password, agree to terms and hit Create Bot. At this point best go make a tea – the bot takes a couple of minutes to set up and then a further 5-10 before the Azure code interface is ready to use while the full environment sets up.

How you host your bot is up to you, but Azure has some options for scaling up and down

Once everything's finished loading, you'll be redirected to the Azure code editor (which can be accessed via the main Azure dashboard). Your bot can now also be easily accessed on the Bot Framework website (<https://dev.botframework.com>), located under the My Bots tab. Further detailed instructions (with screengrabs) of this set-up process can be found on the Bot Framework website (<https://docs.microsoft.com/en-us/bot-framework/azure-bot-service-quickstart>).

SAY HELLO TO YOUR FIRST BOT

On the My Bots page (<https://dev.botframework.com/bots>) you should now be able to see your bot. Click on it to load. You'll be presented with the bot dashboard. ►

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Above left Build powerful conversational UI with Node.js. The Bot Framework also lets you build bots with C# and REST and Direct Line

Above right Azure provisions a web host to house your bot. It also makes linking with popular conversation channels an absolute breeze



Above By building in the Bot Framework, you can easily launch the same code across multiple channels

- In the top-right corner, hit the Test button and have a conversation with your bot. The basic bot we selected on set up is configured to echo anything you say to it, obviously not the most stimulating use case (unless perhaps you're Donald Trump) but it's a start.

To demonstrate the ease with which you can deploy your bot, it should already be set up to work with Skype. Click the Skype channel and it's then as easy as adding your bot as a contact to start communicating with it. The Bot Framework also provides simple embed codes that you can place on your digital channels so others can interact with it. If you want to see how easy channel connection is, take a moment to deploy your bot on another channel.

To access the code for our bot, head back into the Azure portal website where we did the full setup (<https://portal.azure.com>). Your bot (app service) will be in the dashboard. Once the bot has loaded, visit the Build tab to move into the Azure code editor.

GET DIRTY WITH A NODE BOT

At the moment we've got a fairly rudimentary process happening. The bot is taking what you say and then bouncing it back, prefixing with "you said". To get an idea of how easy it is to work with our bot's code, let's alter that text.

In the Messages folder, navigate to index.js. On a consumption-based hosting plan with Azure, this is the main .js file of your bot. You can define the dialog of your bot within the `UniversalBot` object.

```
var bot = new builder.UniversalBot(connector);
bot.localePath(path.join(__dirname, './locale'));
//...BOT DIALOGS ARE ADDED HERE...
});
```

The current dialog looks like:

```
bot.dialog('/', function (session) {
```

```
    session.send('You said ' + session.message.text);
```

Amend the dialog text to what you'd prefer your bot to reply with and hit Save. Mine now looks like this:

```
bot.dialog('/', function (session) {
    session.send('Did you just say ' + session.message.text +
    '?');
```

When testing your bot you should now find your words prefixing (and/or suffixing) the dialog echo. Great, right? Okay, maybe it's not useful or particularly helpful at this point, but stay with me.

CREATE A WATERFALL BOT

The next step is to take our parrot bot and turn it into something vaguely useful. In this example we'll imagine we need a bot to take room reservations for a hotel. Remember, because the Bot Framework is channel-agnostic, this one bot could be used on the website, Facebook, Skype etc.

The conversation we're about to set up is a special kind of dialog called a waterfall. In a waterfall dialog

The Bot Framework provides simple embed codes that you can place on your digital channels

your conservation steps are happening as an array of functions where the result of the first function is passed as input into the next function, and so on. At each conversation step your bot will prompt the user for input, wait for a response, and then pass that response to the next step.

Still operating inside the `UniversalBot` object, let's first welcome our user and ask them when they'd like to stay at our hotel.

```
bot.dialog('/', [
    function (session) {
        session.send("Welcome to the Hotel California.");
        builder.Prompts.time(session, "When would you like to check in and at what time? (e.g.: March 24th at 12pm)");
    },
    function (session, results) {
        session.dialogData.reservationDate = builder.EntityRecognizer.resolveTime([results.response]);
    }
]);
```

You'll notice the `EntityRecognizer` object within this part of the array. Here the bot is using rudimentary

natural language processing to discern if a user is giving us the right information. The Bot Framework lets you easily go one step further and integrate LUIS (www.luis.ai) to recognise user language intent. Utilising the power of LUIS is a tutorial in itself, so I'll leave that for another time. However, I would encourage you to view the Bot Framework's documentation on implementing LUIS (<https://docs.microsoft.com/en-us/bot-framework/nodejs/bot-builder-nodejs-recognize-intent-luis>).

Continuing with our hotel bot, let's next find out how many guests are coming and for how long.

```
builder.Prompts.text(session, "How many guests will be staying?");
},
function (session, results) {
    session.dialogData.guestsNumber = results.response;
builder.Prompts.text(session, "and for how many nights?");
},
function (session, results) {
    session.dialogData.guestsNights = results.response;
```

Last question for now; we need to know what name to hold the room under.

```
builder.Prompts.text(session, "Can I take a name to hold the booking under please?");
},
function (session, results) {
    session.dialogData.bookingName = results.response;
```

At this point there are a number of possibilities. For more custom hotel packages bespoke to each customer, you might want your bot to email a concierge so they can get back to your user with personal recommendations. For a more standard service, you could loop in your web service's API to see what you have available and present the choices to your user so they can select and even pay inside the bot. For now, we'll just close the array and confirm the details back to our user with `session.endDialog()` and end this conversation waterfall.

```
session.send(`Your booking has been confirmed. Booking details: <br/>Date/Check in time: ${session.dialogData.reservationDate} <br/>Number of guests: ${session.dialogData.guestsNumber} <br/>Number of nights: ${session.dialogData.guestsNights}<br/>Booking name: ${session.dialogData.bookingName}`);
session.endDialog();
```

The full index.js file for this example can be found in ►

★ PROCESSING WITH LUIS

OPEN YOUR BOT UP TO NATURAL LANGUAGE

+ Microsoft's LUIS (Language Understanding Intelligent Service) applies machine learning to add intelligence to your conversational UI. If you wanted to get a wider look at the market, IBM's Watson is also worth a look.

In our hotel bot example used in the tutorial, we've looked at putting together a question-and-answer response waterfall. There's some basic validation on the check-in date dialog, but it's not intelligent. Currently, we are also missing validation of any kind on the rest of the prompts. Within LUIS we can use intents, utterances and entities to understand what our users are saying and return the correct response:

- Intents refers to the actions that the user wants to perform, like "book a room". You need to define these individual markers in order to start training LUIS.
- Utterances are the content from your user that you need LUIS to decipher. It could be a sentence like "I need to book a room", or a fragment, like "book room" or "room".
- Entities are the detailed bits of information you want LUIS to act upon when it recognises them. So in "I need to book a room", the entity would be 'room'. LUIS would recognise that and then pass the required action back to your bot.

Follow this LUIS tutorial to get NLP integrated into your bot (<https://docs.microsoft.com/en-us/bot-framework/nodejs/bot-builder-nodejs-recognize-intent-luis>).

You can also read all about LUIS at (www.luis.ai).

★ RESOURCES

ENHANCE YOUR BOT LEARNING

 Conversational UI is nothing new; Kubrick recognised end point AI in the 60s. Hal was a single interface who knew everything relevant to its users and brought many systems together in one place. Despite this, some companies are still churning out FAQ bots and calling them AI.

I'd encourage you to immerse yourself in what's out there on the subject of conversational UI and try to create meaningful experiences that push the boundaries and advance the medium.

If you're stuck, here are some useful resources that should act as a good starting point.

Bot Framework website

<https://dev.botframework.com>

One to keep bookmarked in your browser. The Bot Framework is in preview mode, so expect regular changes or updated content and intermittent bugs.

Designing Bots (O'Reilly)

<http://shop.oreilly.com/product/0636920057741.do>

A great primer for those new to conversational UI. The working examples are useful and the elements that touch on planning will help in your day-to-day work.

Bot code examples

<https://github.com/Microsoft/BotBuilder-Samples>

A whole host of different Bot Framework examples for you to download and have a play with. This GIT repository has both Node and C# examples.

QnA Maker

<https://qnamaker.ai>

If you absolutely have to make an FAQ bot, don't waste too much time. This handy resource will take a spreadsheet or URLs and make one for you.

Do Androids Dream of Electric Sheep? (Philip K Dick)

https://www.goodreads.com/book/show/7082.Do_Androids_Dream_of_Electric_Sheep_

A seminal work on AI, not to mention one of the greatest science fiction novels ever written.

- ▶ the file downloads for this project, just don't forget to update the server location details found at the bottom of the file.

WORK WITH PROMPTS

You'll have noticed that throughout the example we were collecting user information using the `Prompts` object. There are actually a number of different prompt types that will enable you to broaden the opportunity for user engagement. For example, you can ask the user for a string of text; confirm an action; enter a number or date; choose from a list or request the user to upload a picture or video. You can see a full overview on the different types of prompts and how to use them in the documentation section of the Bot Framework website (<https://docs.microsoft.com/en-gb/bot-framework/nodejs/bot-builder-nodejs-dialog-prompt>).

MANAGE YOUR CONVERSATION FLOW

Our hotel booking bot is a great example of how waterfalls can be used to walk a user through a process. What becomes clear very quickly though, is the amount of repetition you would have to rely on if you just used waterfall dialogs for your bot. Our hotel might have a spa, gym and conference room facilities. We don't need to ask for the booking date and name in every single waterfall we create if we already know who the user is and when they're staying with us (remember, personalisation of experience is key).

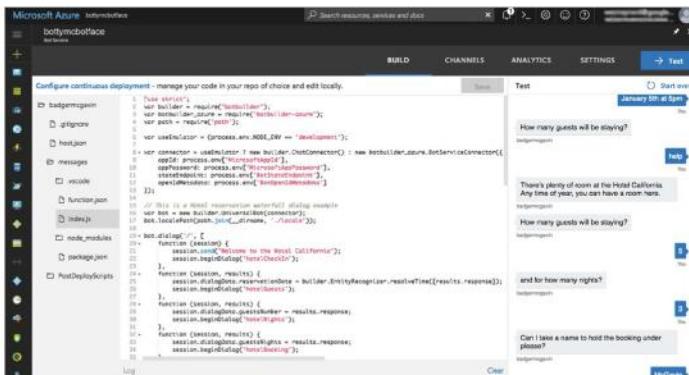
To sidestep this problem we can chain functions together in a waterfall and have separate dialogs that give us individual conversation prompts that can be reused at any time.

As an example, when we want to know how many guests are coming to our hotel (or spa), we can use an identifier like `hotelGuests` and create our conversation prompt to gather the information. By using the identifier you can create as many waterfalls as you need and only ever have one unique conversation dialog to update or change.

Implementation involves separating the `bot.dialog` and introducing the `beginDialog` object. With that in mind, the `guestsNumber` function in my waterfall now looks like this:

```
session.beginDialog('hotelGuests');
},
function (session, results) {
  session.dialogData.guestsNumber = results.response;
```

While the separate dialog function (which can be reused by multiple waterfalls) has been altered to look like this:



```
bot.dialog('hotelGuests', [
  function (session) {
    builder.Prompts.time(session, "How many guests will be staying?");
  },
  function (session, results) {
    session.endDialogWithResult(results);
  }
]);
```

The full updated index.js for this rework of our hotel bot is available to view within the file downloads of this project.

THIS ISN'T THE DIALOG THAT YOU'RE LOOKING FOR

Our hotel bot is a great example of how to use conversation to walk a user through a step-by-step process of gathering information. However, there is one thing we haven't done and that is to consider what happens if a user has a problem and needs to interrupt the waterfall. Perhaps the user wants to know how many guests they can have per room, or maybe they need to know what's the earliest time they can check in.

Inserting a `triggerAction` will have your bot listen for a specific input type. In the example given below, our bot is waiting to hear `Help` before it triggers the action.

```
bot.dialog('help', function (session, args, next) {
  session.endDialog("INSERT HELP TEXT HERE");
})
.triggerAction({
  matches: /^help$/i,
});
```

This is certainly useful, but you couldn't exactly call it intelligent. The help offered to your users here is global, and once it is delivered and digested, the user has to start the waterfall all over again. The ideal

scenario in this situation is to have contextual help, dependant on where the user is in the waterfall. They then need to be able to pick up the conversation from where they left off.

The way we do this is by adding `beginDialogAction` to our `hotelGuests` dialog, which just sits there listening until it hears a cry for help. You simply bolt the contextual help onto the existing individual conversation dialog, like this:

```
bot.dialog('hotelGuests', [
  function (session) {
    builder.Prompts.text(session, "How many guests will be staying?");
  },
  function (session, results) {
    session.endDialogWithResult(results);
  }
]).beginDialogAction('hotelGuestsHelpAction',
'hotelGuestsHelp', { matches: /^help$/i });
bot.dialog('hotelGuestsHelp', function(session, args, next) {
  var msg = "INSERT CONTEXTUAL HELP TEXT HERE";
  session.endDialog(msg);
});
```

The index.js for this help edit part of our Hotel bot is also available to view within the file downloads supplied for this project.

GO FORTH AND MULTIPLY

I can't stress enough how much this is only dipping your toe in the potential power of creating engaging conversational UI. Good bots happen when you shorten a journey for a user and/or bring multiple sources of information into one resource.

If you can then wrap this up with some personalisation to keep the experience fluid and encourage re-engagement, you'll end up with something that 95% of the market, so far, haven't created. ■

Above left Azure's in-built code editor is intuitive, albeit a little cramped. You can also download files to code in your editor of choice

Above right The Bot Framework provides exhaustive documentation on introducing functionality that will make your bot a whole lot smarter

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★ HTML EMAIL

ADD ACCESSIBILITY TO YOUR HTML EMAILS

Mark Robbins shows us some of the main issues with accessibility in HTML email and the best ways to fix them

 HTML email is one of those things a lot of web developers really dislike working on. The most common complaints heard are that it's very complex and very restrictive. Another area where you can hear exactly the same complaints is accessibility. So combining the two and making HTML email accessible has got to be hugely restrictive and massively complex, right? Well, a little bit of knowledge in both areas can go a long way, so we're going to go over a few of the basics.

ACCESSIBLE DESIGN AND CONTENT

The implementation may vary but the general rules and best practice for accessible design and content are the same, be it in email, web, apps or even print.

Keep the text styling easy to read, keep the content easy to understand, and avoid low contrast designs.

ALL IMAGE EMAILS

One very bad trend to get around the complexity of email code that is being seen more regularly, is putting all the text of an email into images. This can lead to a number of accessibility issues. For one, it is often accompanied by a bad use of alt text, but even if that is done right, we still lose the hierarchy, so we don't know what is a heading, paragraph, quote or a list.

If you're using a screen magnifier then text will become blurred when zoomed, unless the image is saved at a very high resolution.

Any text filters, such as switching to a clearer font or increasing font size will not apply to text in images. And from a more general development and marketing point of view, it takes longer to make small text updates, the content is not searchable from the inbox and there is a higher chance of ending up in the spam folder.

HEADING AND PARAGRAPH ELEMENTS

`<h>` and `<p>` elements are the first things we look at when learning HTML, and are the essential starting point of accessibility, yet people still avoid them when coding email. The reason being that they have inconsistent margins. The solution is simple; add margin styles inline on these elements.

LIST ELEMENTS

Instead of using `` or `` elements for lists, a lot of people use a 2-column table; one column to hold the bullet points or numbers, the other for content. This does render consistently but also uses a lot of code.

The reason given is that the Outlook desktop client doesn't support list elements. But that's not entirely

“It’s a good idea to keep tables to a minimum. They add a lot of weight to your code and are bad for accessibility”

true, Outlook does support list elements as long as you don't apply a margin. When you apply a margin to a list element, Outlook will convert code into a series of `<p>` elements, therefore losing the layout and semantic context of a list.

TABLES

Microsoft's Outlook desktop app on Windows, and the Windows Mail app both use Microsoft Word to render HTML. It's because of this that most emails are built using table layouts.

There are three things you need tables for when working with Outlook; changing the width, changing the background and adding multiple columns.

It's always a good idea to try and keep tables to a minimum. They add a lot of weight to your code and they are bad for accessibility.

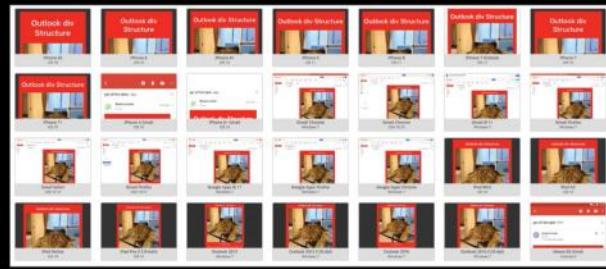
When using a screen reader, each cell is announced with its content in the table, as opposed to just going straight to the content. When a number of tables are used, and particularly when they are nested inside



TESTING ACCESSIBILITY IN EMAIL

Testing email is a complicated enough procedure. Chad White wrote a blog post that estimated: "Every email that marketers send has approximately 15,000 potential renderings (and that's using conservative math)."

Then if you add the layers of accessibility testing into that, you'll very quickly get overwhelmed.



Test emails Make use of a dedicated email tester to ensure nothing is wrong. You'll be presented with screenshots of the email from different clients to check

So the best advice is to simplify it. Test everything in the browser first then you can use standard web accessibility tools like the WAVE Evaluation Tool and aXe browser extension as well as a screen reader. Also, if it works in the browser and you have a View Online link, you know you're covered for edge cases. Once you're satisfied with the browser version, try an email testing tool like Litmus or Email on Acid. Both of these will return a large number of screenshots from different email clients, which you can compare to the original to make sure there are no major changes to colours or layout that may affect accessibility.

It's also good to do a little live testing by sending the email to your own email accounts. You can set up a number of webmail accounts for free, and if you have an Android you may find a colleague with iOS or vice versa.

★ IN-DEPTH

EMAIL ACCESSIBILITY: SPREADING THE WORD

 You may be lucky and work with a company that recognises the importance of incorporating accessibility into its email code, but there's no need to give up if your company doesn't quite see the point. There are a number of clear arguments you can make for why it's needed, which we share with you below.

Firstly there's the moral issue. If you're a good person you don't want to block anyone from accessing content. "The power of the Web is in its universality. Access by everyone regardless of disability is an essential aspect," said Tim Berners-Lee, the inventor of the World Wide Web.

Then there's the stats. If a bug is found in Gmail that's a top priority to fix, as it currently has a 22% market share. Even a bug in Yahoo Mail at 3% market share is a pretty high priority to fix. Now let's look at that in terms of accessibility.

- 15%-20%** ★ of people have reading difficulties, including dyslexia
- 22%** ★★ of emails are opened on Gmail
- 8%** ★ of caucasian males suffer from some form of colour blindness
- 8%** ★★ of emails are opened on Outlook
- 7%** ★ of working age adults have a severe dexterity difficulty
- 8%** ★★ of emails are opened on Apple Mail
- 3-4%** ★ of people can't see well enough to read
- 3%** ★★ of emails are opened on Yahoo! Mail

Sources:

- * powermapper.com/blog/website-accessibility-disability-statistics
- ** emailclientmarketshare.com

If you're finding that morals and stats don't do the trick, then legality and the potential for fines should help to tip the scales. There has already been a number of lawsuits across the globe penalising websites for lack of accessibility, resulting in large fines. While we're not yet aware of any specifically targeting email, you certainly don't want to be the first.

► each other, it's extremely hard to keep track of the actual content.

To stop any of this from happening, you can add a `role` attribute.

```
<table role="presentaion">
```

This makes the table semantically neutral, as if it were built with `div` elements, meaning the screen reader can jump directly to the content.

Problem solved? Well not quite. After you've finished coding your email you need to upload the HTML to an email service provider (ESP) and then send it out to all the email clients. At both of these points the code is run through a preprocessor that can add to, remove or edit parts of the code. Unfortunately this can include removing the `role` attribute. In a test of around eight ESPs, we found that only mailchimp removed the `role` attribute, although that may be fixed now. For email clients, Outlook.com, Outlook 365 and the Outlook mobile as well as AOL, Yahoo, GMX and web.de are all known to remove the `role` attribute. We've reported this as a bug and hopefully these will get fixed soon.

In the meantime there is another way to get around this. As we mentioned earlier, we only need to use table layout for the email clients that use MS Word rendering. We can target those clients specifically with `mso` conditional comments (similar to IE conditional comments) and use what are known as ghost tables.

```
<!--[if (mso)]-->
<table role="presentation" width="600" align="center"
cellpadding="0" cellspacing="0" border="0">
<tr>
<td>
<![endif]-->
<div style="max-width:600px;margin:0 auto">
<!-- content -->
</div>
<!--[if (mso)]-->
</td>
</tr>
</table>
<![endif]-->
```

Outlook and Windows mail will render the table code inside the comments and all other clients will ignore it. So essentially you're building `div`-based layouts with a table fallback for MS Word rendering.

AUTO LINKING

Auto linking is where an email client will detect a phone number, date, address or URL and convert

it into a link. iOS has also started linking film and music titles to iTunes, which has been criticised by users as being intrusive.

At first this seems like it might be a good idea, but unfortunately there are a number of significant issues with it. For a start, numbers can cause a problem. Order numbers, reference numbers or any set of digits over four characters long will be converted into a phone number. We also wanted to test if the date 10/11/12 would be read as 10th November 2012, October 11th 2012 or 2010 November 12th, and was very surprised when the Outlook app on Android converted it into a phone link with the number 101112.

As well as the poor contextual linking issue, there is a bigger accessibility issue and that's the removal of colour contrast.

For example, if you have text on a dark background, when it's converted into links, the

“At both these points, the code is run through a preprocessor that can add to, remove, or edit parts of the code”

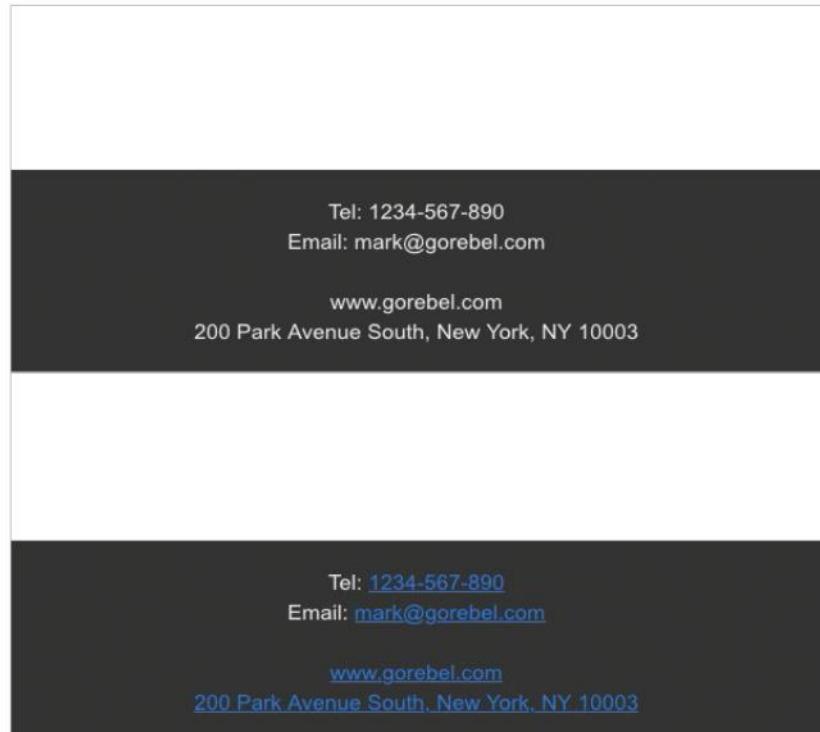
text becomes blue and hard to read. There are a few solutions but none of them are perfect.

```
#wrapper a{
font:inherit;
color:inherit;
text-decoration:none;
/* pointer-events:none; */
}
```

You could style all the links to inherit the styles from their parent. We've added an id of `wrapper` here to increase the specificity, you could also use this to only target a specific section. The advantage here is one rule will apply to everything; the disadvantages are you need to remember to style links you intentionally want to include back to look like links again. It won't work in every email client and screen readers will still read the links as links.

email‌@‌gorebel‌.com

Another option available to you is to use zero width no joiner (`‌`) elements. Using these in your code means when the preprocessor passes the



Above Auto linking turns text blue when it's converted, which is an issue on dark backgrounds

code it doesn't pick up the patterns it's looking for. The advantage here is the link isn't created in the first place, so there's no need to change styles; the disadvantages are you need to test where the auto links are occurring before adding this code, it can break up the speech pattern of screen readers and again, this doesn't work everywhere.

```
<a href="tel:1234567890" style="color:white;">
1234-567-890
</a>
```

The third option available is simply to convert the text into links yourself and style it as you see fit. The advantage here is you have full control over the link styling and end point; the disadvantage is you don't know where to insert the links until you test it. Also, you may have to add links to things you don't really want linked and these links will go on to appear in all email clients.

So for auto linking, it's probably best to judge each case as it comes up.

ONE LAST THING

The important thing to remember is that, yes, it takes some time to properly understand and implement accessibility across all your email campaigns, but even a little change can go a long way. You don't have to rush and do everything at once, but you really should do something. ■

TIME TO STEP OFF THAT TREADMILL

With so many demands from work, home and family, there never seem to be enough hours in the day for you. Why not press pause once in a while, curl up with your favourite magazine and put a little oasis of 'you' in your day?



PRESS PAUSE
ENJOY A MAGAZINE MOMENT

To find out more about Press Pause visit:

pauseyourday.co.uk



* ACCESSIBILITY

A NEW DEFINITION FOR ACCESSIBILITY

David Caldwell makes the case for altering the definition of accessibility in order to make the concept more accessible

> As an accessibility professional I'm acutely aware of some of the myths that surround accessibility and how deep rooted they can be. Some of my favourites include 'The market isn't big enough for us to worry about', 'accessibility constrains my designs' or even 'it's not my job'. While it might be plainly obvious to accessibility professionals why none of these things are true, I often find that many people use these myths as a way of protecting themselves from accessibility as they're often unsure or worried about what it will mean for them.

So how do we reset the conversation around accessibility? How do we reposition it as an opportunity rather than a constraint? Well, I think that we need to start by better explaining what accessibility is all about and how, done right, it can improve your product or service for everyone.

If you look up the term accessibility, pretty much every definition you'll find talks about disability. While accessibility is definitely related to disability, it's also about a whole lot more and herein lies the problem. For many people, disability is an abstract concept. It's something they've seen on the TV or

when walking down the street. For the majority of people, it's something they don't experience first hand and so it's difficult for them to relate to. When you combine this with the fact that the average age of acquiring a disability is 55, it's easy to understand why young developers and designers don't get it.

If we could change how we look at accessibility, as something that helps everyone, every day, then we'd probably see a big change. Let me give you an example. Under the current idea of accessibility a mobile app would be made accessible for people with low vision by using high contrasting colours and large interaction areas. These same design considerations would also benefit someone using their phone in bright sunlight or who had just had laser eye surgery and in many more situations, too. When we think about accessibility in this way we don't confine it to the 12.8 million people in the UK with a disability, we open it up to everyone.

So here's my proposal. Let's change the definition of accessibility. Let's say that accessibility is about helping everyone to use our products and services or be employed by us. Simple really. ■

PROFILE
David (@CFUNN) is a digital accessibility manager at Barclays. In his role he's responsible for the Accessibility Academy – a culture change, training and development programme.

*



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* ADOBE XD

WHAT'S NEW IN ADOBE XD'S BIG UPDATE?

Daniel Schwarz walks us through the new Design Spec features (and much more) from Adobe XD's massive update

 After much anticipation Adobe finally released version 1.0 of Adobe XD, although some designers felt this was a bit strange because the beta already felt like a mature design application that we've been using for years.

Version 1.0 debuted having already introduced Symbols (among other important features), and both the Prototyping and Repeat Grid features have been around ever since Adobe XD first launched, setting a new standard for what all UI design apps must now have by default.

Now, after only two months since version 1.0 was released, Adobe XD is already beginning to trial Design Specs (beta), which is an extension of the Share functionality that exists in the browser and enables designers to handoff designs to developers.

Even though Adobe XD aims to introduce plugins (like Sketch), designers may opt to use XD's own

handoff features, much like they have with the critically-acclaimed Prototyping features.

But does this mean that Adobe XD is everything we need in a single app?

Let's have a look at how it works to decide.

PREPARING FOR DESIGN HANDOFF

Design handoff happens way before the actual handoff. Designers should always be keeping their designs clean by removing redundant layers and styles, and ensuring that styles are visually consistent (visual inconsistency is confusing for users, as well as the developers who have to implement those styles as code).

For example, if your border colours are supposed to be #999999, but you have a few instances that are #888888, then that's going to be confusing for developers implementing those styles. Which style

is the correct one? What if the developer implements both of these styles, resulting in a bulkier codebase and a bucketload of visual inconsistencies? Designers need to double-check that their designs are cleaned up before the handoff.

Here are a few handy tips to remember:

- Double-click on the layer/object names to give them a clearer name
- Press backspace to delete layers and objects
- Create document colours to organise your colours
- Make use of Symbols to maintain consistency

If you follow these simple rules, not only will your handoff make more sense to the developers coding the design, but it'll make more sense to you as well, as you expand the design.

“Handoff for developers is... a case of opening the share link and clicking each object”

3, 2, 1, HANDOFF!

Ready for lift-off? In short, handoff is initiated when you share the document like normal. If you're a first-time user of Adobe XD, the Share icon is in the very top-right corner. The only difference between sharing a design and handing over a design is that you'll choose the Publish Design Specs (Beta) option, rather than the Publish Prototype option. The only notable difference between the two options is that the comment interface will be switched with a type of inspector interface that displays the styles used. Other than that, the two sharing UIs are largely the same, which you'll see in a short moment.

First, let's create our design specs

As already mentioned, click the Share icon and then Publish Design Specs (Beta) in order to begin creating the design specs.

HOW THE HANDOFF PROCESS WORKS FOR DEVELOPERS

Handoff for developers is super simple. It's really a case of opening up the share link and clicking each object in turn, where the styles for that object are displayed in the specs interface on the right-hand side. Although, there is a little more than meets the eye here. Let's quickly dive into this window to learn what's going on, and how to inspect styles:

*** FOCUS**

WHAT YOU CAN DO WITH DESIGN SPECS

+ In addition to not being able to copy styles as CSS, Android, Objective-C or Swift code, there's also currently no way to extract exported image assets from the handoff window, or display commonly-used colours as specified in the Adobe XD colour chooser widget. Although, it's probably a safe bet on this functionality being included in a future update soon, considering how lean Adobe XD's iterative software development process has been thus far.

What you *can* do now though, is inspect styles, copy style values to the clipboard, and measure the spacing between layers.

You can measure the distance between two objects by clicking on one object and hovering over another. This works exactly like Smart Guides, but without the need to hold Alt/Option.

All in all, the Design Spec features work wonderfully and they're certainly a lovely addition to the exceptional design and prototyping features that already exist, enabling designers to consolidate their workflow into a singular application.

We can expect Design Specs to become even better with the next couple of updates, which is likely to include support for exported image assets and fonts, as well as the ability to extract styles as web and mobile app code.

Our review: 7/10. A promising start to design handoff that hints at more to come, but delivers something usable in the meantime.

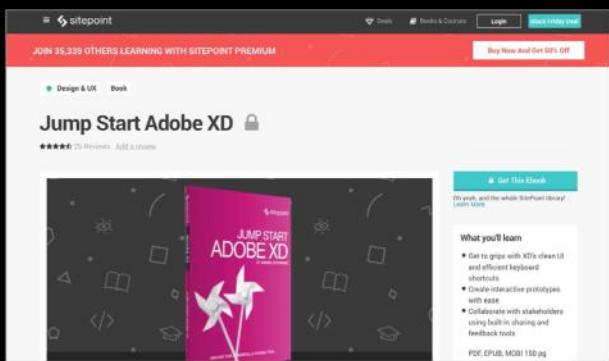
Top left
To begin the design process, simply click the Share icon and then the Publish Design Specs (Beta) option

Bottom left
From the modal that reveals itself, click Create Public Link after giving your specs a name. You don't need to append a suffix, since versions are tracked

IN-DEPTH RESOURCES

+ Resources for Adobe XD were hard to come by at first, but now that version 1.0 has been released and traction on the app has begun, fresh resources like UI kits are beginning to emerge. Although there aren't many books on the subject yet, it's exciting to see designers creating things like the Bootstrap Grid Template, which leverages the new Layout Grids feature to create a Bootstrap-like responsive layout for web designs.

Here's a list of UI kits, books and other useful resources for anybody looking to improve their Adobe XD workflow:



- **Jump Start Adobe XD** <https://www.sitepoint.com/premium/books/jump-start-adobe-xd>
A quick-start book for learning XD.

- **XD Guru** <https://www.xdguru.com>
UI kits and tutorials.

- **XD Resources** <https://xdresources.co>
Over 100 UI kits.

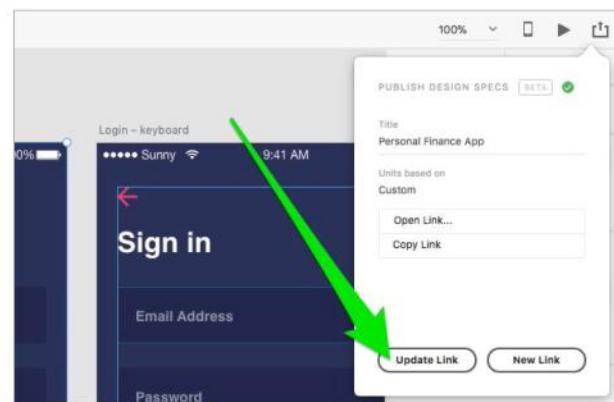
- **PSDDD** <https://psddd.co/format/xd>
More UI kits.

- **Bootstrap Grid Template**
<https://psddd.co/free-adobe-xd-bootstrap-grid-template>
A template for the new Layout Grids feature.

- **Wires** <https://www.behance.net/gallery/55462459/Wires-wireframe-kits-for-Adobe-XD>
Adobe's flagship UI kit for XD.

- **Personal Finance** <https://dribbble.com/shots/3843562-Personal-finance-FREE-download>
UI kit of mobile screens.

- **Keyboard shortcuts for XD** <https://blog.mrdaniels.ch/warz/adobe-xd-keyboard-shortcuts>



Above Image assets are uploaded at @0.5x, @1x, @2x and @3x resolutions (although developers can't extract them from the design handoff window in version 1.0 of Adobe XD). From here on out, designers don't need to do anything other than hit the Update Link button when a change is made to the design

► **1** By clicking the Back button (in the top-left corner) or the left and right arrows (found in the middle-bottom area), you can navigate between the different screens in your design, so that developers can code one screen at a time. Right underneath the Back button, there's also a little time indicator that tells you when the design specs were last updated.

2 In the top-right region of the window there's a dropdown that lets you specify the amount of zoom applied – this is useful for inspecting the styles of smaller objects on the Artboard.

3 And on the right-hand side, the inspector displays the styles for the currently selected object, or displays a design-wide overview of all the colours and character styles used in the design if no object is selected. You can click on these styles at any moment in time to copy their values to the clipboard, although you cannot currently copy them as code snippets (for example, CSS, Android, Swift or Objective-C).

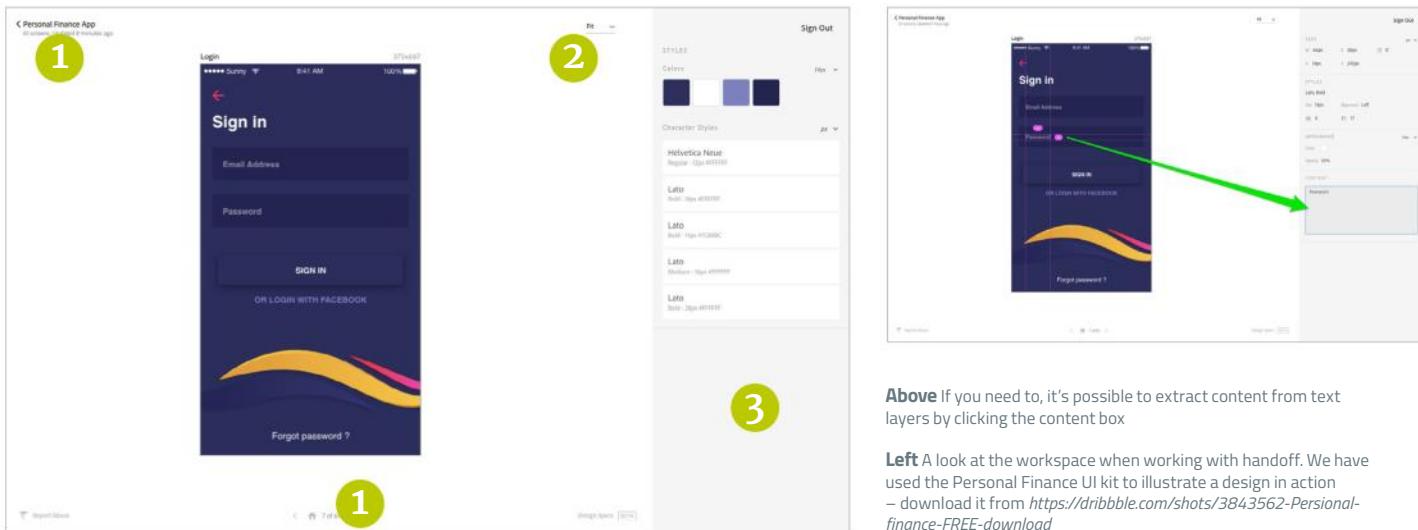
As well as being able to copy the styles themselves to the clipboard by selecting an object, then clicking said style from the inspector on the right-hand side, you can also extract content from text layers by clicking on the content box.

WHAT ELSE?

Adobe XD has released a bunch of other features in addition to Design Specs. Let's have a closer look at what these are.

Layout Grids

Sketch users will be familiar with Layout Grids. By setting the number of rows and columns and their



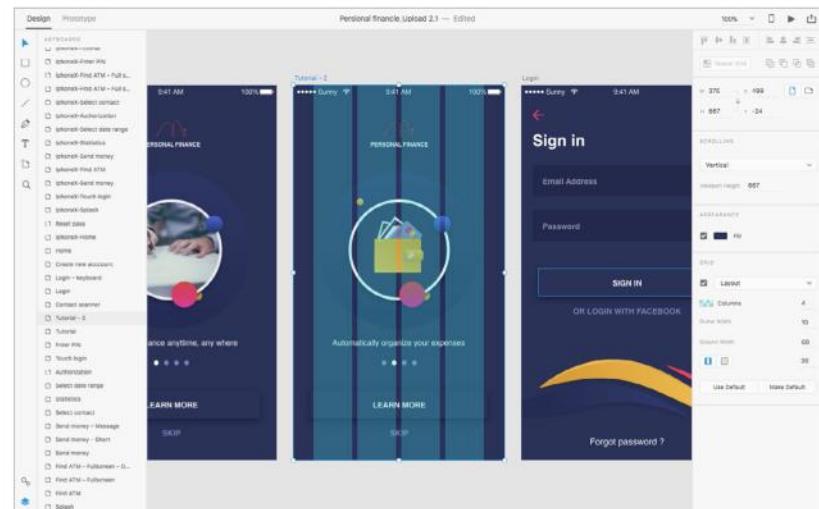
“Navigate between different screens in your design, so developers can code one at a time”

respective gutters, you can create grid systems for web designs. These can be custom, or they can match the systems of commonly-used CSS frameworks such as Bootstrap or Foundation. Developers often use these CSS frameworks to reliably code rock-solid responsive websites.

Hit Cmd+Shift+` in Mac (Ctrl+Shift+` in Windows) to activate Layout Grids on an Artboard (or navigate to View>Show Layout Grid) from the app menu bar. After that, you can tweak the number of columns and the columns' widths in the inspector from the Grid section, although by default, Adobe XD intelligently displays what it thinks is the best grid system for that device size, according to the size of the Artboard. From the drop-down box that would currently say Layout Grid at this stage, you can switch to Square Grid to display a more evenly distributed grid more suited for illustrations, where Square Size is the size of each grid tile, in pixels.

JPG Export

Naturally, user interface designers don't often export images as JPGs, simply because it's not a desirable file format in most cases. That being said, they do have their uses; for example, they can be compressed and optimised, making them a handy option for photography-heavy websites that want to capture users emotionally.



A PNG would make an image like this way too large to use in terms of its file size, and SVG only deals with vector images. Also, many designers will turn to tools like Sketch and Adobe XD simply to resize images, because it's the tool that they feel most efficient with.

Exporting as a JPG works like any other file format export. Just hit Cmd+E if you're using Mac (or Ctrl+E in Windows) and then choose JPG from the list of file format options. You also have further control by being able to specify the quality/compression level on a scale of 0–100% from here.

Adobe XD's November 2017 update also ships with some text enhancements and a bunch of improvements for Windows 10, bringing the Windows 10 version a little more up to speed with the macOS version. For the full list of what's changed in this update, pay a visit to Adobe's official feature summary (<http://netm.ag/302-adobe-xd>). ■

Above If you need to, it's possible to extract content from text layers by clicking the content box

Left A look at the workspace when working with handoff. We have used the Personal Finance UI kit to illustrate a design in action – download it from <https://dribbble.com/shots/3843562-Personal-finance-FREE-download>

Above Click on Make Default to save your setup as the default setup for future Layout Grids, or click Use Default to apply your saved setup



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* TACHYONS

USE TACHYONS TO DESIGN DIRECTLY IN THE BROWSER

Learn how to skip static comps and use functional CSS to design mobile-first responsive websites directly in the browser

When I first came across Tachyons and saw its seemingly inscrutable classes like `f1` and `pa3`, I'll be honest and say that I hated it. If you've been writing CSS for a while, you'll probably find that you have exactly the same gut reaction too. Frankly, if you're a developer trying to translate a designer's comp into a real website, this might not be the right approach for you. However, if you're a designer looking to work in the browser or a developer who wants to ease your design team into working in code, Tachyons may fundamentally change your design process, exactly like it did ours at Fore Design.

WHAT IS TACHYONS?

Tachyons isn't a design framework. Instead, it bills itself as a 'design toolkit', which I think is an apt description. It makes no assumptions about how

your website should look so there isn't a canonical style. What it does give you is a sensible scale for typography, a similarly sensible scale for spacing, and intuitive classes that make mobile-first responsive design a breeze.

WHY USE IT?

It wasn't until I started using Tachyons that I realised how much time I used to spend architecting CSS when I was trying to design. Removing the need to organise and name styles and switch contexts between HTML and CSS removes so much friction from the process that it alone is reason to consider Tachyons. It has also made collaborating with other designers easier, made our code easier to debug, and made our designs more stable by removing unintended side effects of a changing codebase.

GET STARTED

You can download the Tachyons library from <http://tachyons.io> or pull it into your project with npm, but the fastest way to get started is to use the HTML template from the Tachyons website:

```
<!DOCTYPE html>
<html lang="en">
<title>Hello Tachyons</title>
<meta name="viewport" content="width=device-width,
initial-scale=1">
<link rel="stylesheet" href="https://unpkg.com/tachyons/
css/tachyons.min.css">
<body>
</body>
</html>
```

A DESIGN SYSTEM THAT IS BUILT ON MODULAR SCALES

Tachyons is built on two harmonious scales as defaults: a typographic scale and a spacing scale. Both scales are measured in rem units instead of pixels. This might feel awkward at first but it's helpful to think in terms of proportion and hierarchy rather than granular pixel values, especially when you're getting started.

The type scale is comprised of seven steps: step 1 representing the largest size in the scale at 3rem right down to step 7, which represents .875rem, with five steps in between that are enough to give you an unambiguous hierarchy.

All of the classes on the type scale are prefaced with the letter f (for the font size). f1 is the class for the largest font on the type scale and f7 is the smallest. This mimics the hierarchy that you'd expect in HTML headings, which makes it really easy to get used to.

The spacing scale used for margin and padding, logically, works in reverse. It goes from 0 to 7; 0 being the smallest (no spacing), 1 measuring .25rem, with each step doubling thereafter. If you wanted a little margin on the right of an element for instance, you might give it a class of mr3 (margin-right, step 3).

You might find that your first reaction is to customise the scales but I highly recommend resisting that temptation. It won't take long to understand the design system and you'll become a faster, more effective web designer when it clicks. Then, when you're fully up to speed, you'll be able to see if it makes sense to customise any of the default values. (We usually change the mobile breakpoint, add an extra step in the width scale, and almost always modify the colours).

* FURTHER READING

WHY DESIGN IN CODE?



Until recently, the process of writing HTML and CSS was slow and switching contexts from design to code made for a frustrating experience. It made sense that lots of designers (myself included) fell back to what we were most familiar with – design software – that would enable us to express our ideas with as little friction as possible. Static comps don't make the transition to code in quite the right way, however, because we're not designing where our work is being viewed.

However, the introduction of functional CSS has finally made it possible to design in the browser in a way that's more intuitive for those of us used to design software. Writing HTML with small, composable classes is very much akin to selecting a font size from a drop-down menu.

In addition to this fluidity, designing in code has some other major benefits. Understanding what's possible (or not possible) by experimenting is super easy. Conversely, you'll have a better understanding of what might take ages to build out and whether it's going to be worth it or not.

You'll no longer need to ask someone else to make a tweak for you. Instead, you'll have the power to finesse your own work as much as you'd like. This has the added benefit of the work only needing to be done once instead of twice. It's also less likely you'll forget to account for a state or a screen, then have to go back and spend time reconfiguring your design system (and your files).

“You might find that your first reaction is to customise the scales but I highly recommend resisting”



Tachyons' spacing scale might not seem granular enough but if you embrace it, you'll end up with a harmonious design.



RESOURCES

* IN-DEPTH

+ The Tachyons website (tachyons.io) is the best place to find information and documentation about the project. Perusing the source code on GitHub should also be high on your list. The Tachyons library is written in many small modules, which is fantastic for understanding how it is put together. At the beginning of every Tachyons module is some helpful documentation that tells you exactly how to use it, broken down by base, modifier, and media query extension.

```
/*
TEXT ALIGN
Docs: http://tachyons.io/docs/typography/text-align/

Base
t = text-align

Modifiers
l = left
r = right
c = center
j = justify

Media Query Extensions:
-ns = not-small
-m = medium
-l = large
*/
```

If you're in a hurry there are two 'cheat sheets' that I find helpful in my day-to-day work. The first, Tachyons Cheatsheet (<https://roperzh.github.io/tachyons-cheatsheet>) by Roberto Dip, is a fast way to find the class you're looking for. Tachyons tldr (<https://tachyons-tldr.now.sh/#/scales>) by Varun Vachhar does an excellent job of visualising Tachyons' type and spacing scales.

“Once you understand how Tachyons’ classes are named, you’ll find that you’ll be able to predict what they might be”

► THE ANATOMY OF A TACHYONS CLASS

Tachyons is made up of lots of little CSS classes to use in your HTML. That means no more thinking of so-called semantic names like 'headline' or 'hero'. Instead, Tachyons' classes describe the style of each element. The inscrutable classes I was talking about earlier? Turns out that they all follow a formula. Once you understand how Tachyons' classes are named, you'll find that you'll be able to predict what they might be. The formula goes like this:

base + modifiers + media queries

Base is typically a shorthand for the name of the CSS property (for example, `m` for margin, `p` for padding or `b` for border).

Modifiers change the base in some way, usually its size, using either the scales I mentioned earlier or a literal value (more on that later).

Tachyons also gives us two break points, medium (`-m`) and large (`-l`), as well as a utility to catch both breakpoints that's called 'not small' (`-ns`).

SOME EXAMPLES

Let's put this all together in a responsive page title:

```
<h1 class="f3 f2-m f1-l">Getting to Know Tachyons</h1>
```

In this case `f` is the base, from the type scale module. The scale values (3, 2, and 1) are the modifiers, and `-m` and `-l` indicate the media query breakpoint we're targeting. Let's try another:

```
<div class="w-100 w-50-ns">...</div>
```

If you guessed that this `div` has a width of 100% on small screens and a width of 50% on larger (or not-small) screens, you're starting to get it.

You might have noticed that 100 and 50 are not on either of the scales that I mentioned earlier and they look different, too. There are two kinds of values in Tachyons: scale values like `w4` and literal values like `w-100`. It's easy to tell the two apart – literal values are always preceded by a dash.

LAYOUT DESIGN

Layout is obviously a key part of any design and Tachyons handles that need beautifully as well. In all of our projects at Fore Design, we implement a responsive grid and since we've adopted Tachyons in our process, we haven't had to write a single line of CSS in order to achieve this.

There is an example implementation of a float-based grid in the documentation but we typically

A	A	A	A	A	A	A
.f1	.f2	.f3	.f4	.f5	.f6	.f7
3rem	2.25rem	1.5rem	1.25rem	1rem	.875rem	.75rem
48px	36px	24px	20px	16px	14px	12px

prefer Flexbox-based grids. Note that there isn't a built-in 'grid' class, so instead all we need to do is string together classes from the Flexbox module and the width module, then add a little horizontal padding to simulate gutters:

```
<div class="flex flex-wrap">
<div class="w-100 w-third-l ph3">...</div>
<div class="w-100 w-third-l ph3">...</div>
<div class="w-100 w-third-l ph3">...</div>
</div>
```

WORK WITH COLOUR

Tachyons is preloaded with a palette of grayscale or accessible colours that you can find in the documentation. Colours can be used for text or as a background. To set a text colour you simply add that class, so a red headline would look like this:

```
<h1 class="red">Hello World</h1>
```

Setting background colours works the same way but we preface the colour with `bg-`. If you wanted the background of a div to be red, it would look like this:

```
<div class="bg-red">...</div>
```

As I mentioned earlier, colour is one area that you'll almost certainly want to edit to coordinate with your site's brand palette.

CUSTOMISE TACHYONS

When it comes to customising or extending Tachyons, you have a few different options to pick from. You could simply overwrite Tachyons styles with your own styles, either in a separate style sheet or by editing the default values. However, if you've

Black #000	Washed Yellow #fffceb
Near Black #111	Purple #5e2ca5
Dark Gray #333	Light Purple #a463f2
Mid Gray #555	Dark Pink #d5008f
Gray #777	Hot Pink #ff41b4
Silver #999	Pink #ff80cc
Light Silver #aaa	Light Pink #ffa3d7
Moon Gray #ccc	Washed Red #ffd9df
Light Gray #eee	Dark Green #137752
Near White #f4f4f4	Green #19a974
White #fff	Light Green #9eebcf
Dark Red #e7040f	Washed Green #e8fdf5
Red #ff4136	Navy #001b44
Light Red #ff725c	Dark Blue #00449e
Orange #ff6300	Blue #357edd
Gold #ffb700	Light Blue #96cff
Yellow #ffd700	Lightest Blue #cdecff
Light Yellow #fbf1a9	Washed Blue #f6ffff

already got a build system in place, there may be a repo in the Tachyons project that suits your needs perfectly. Tachyons itself is built with PostCSS and the team also maintains repos, such as `tachyons-sass` (<https://github.com/tachyons-css/tachyons-sass>), a Sass implementation of Tachyons. While still in beta as of this writing, `tachyons-generator` (<https://github.com/tachyons-css/tachyons-generator>) aims to make creating your own custom build of Tachyons an even easier process.

It's important to understand that using Tachyons doesn't mean you'll never write CSS again, you'll just write a lot less of it. When you do, hopefully you'll write a Tachyons style class because you now understand just how powerful composing many small classes can be.

Top The type scale in Tachyons gives you all of the typographic hierarchy you should need for any project you work on

Above Tachyons' built-in colour palette will get you going quickly and can be customised or extended to suit your project

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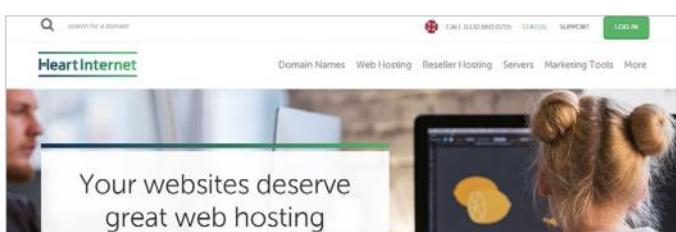


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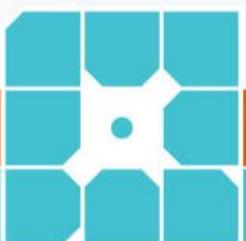


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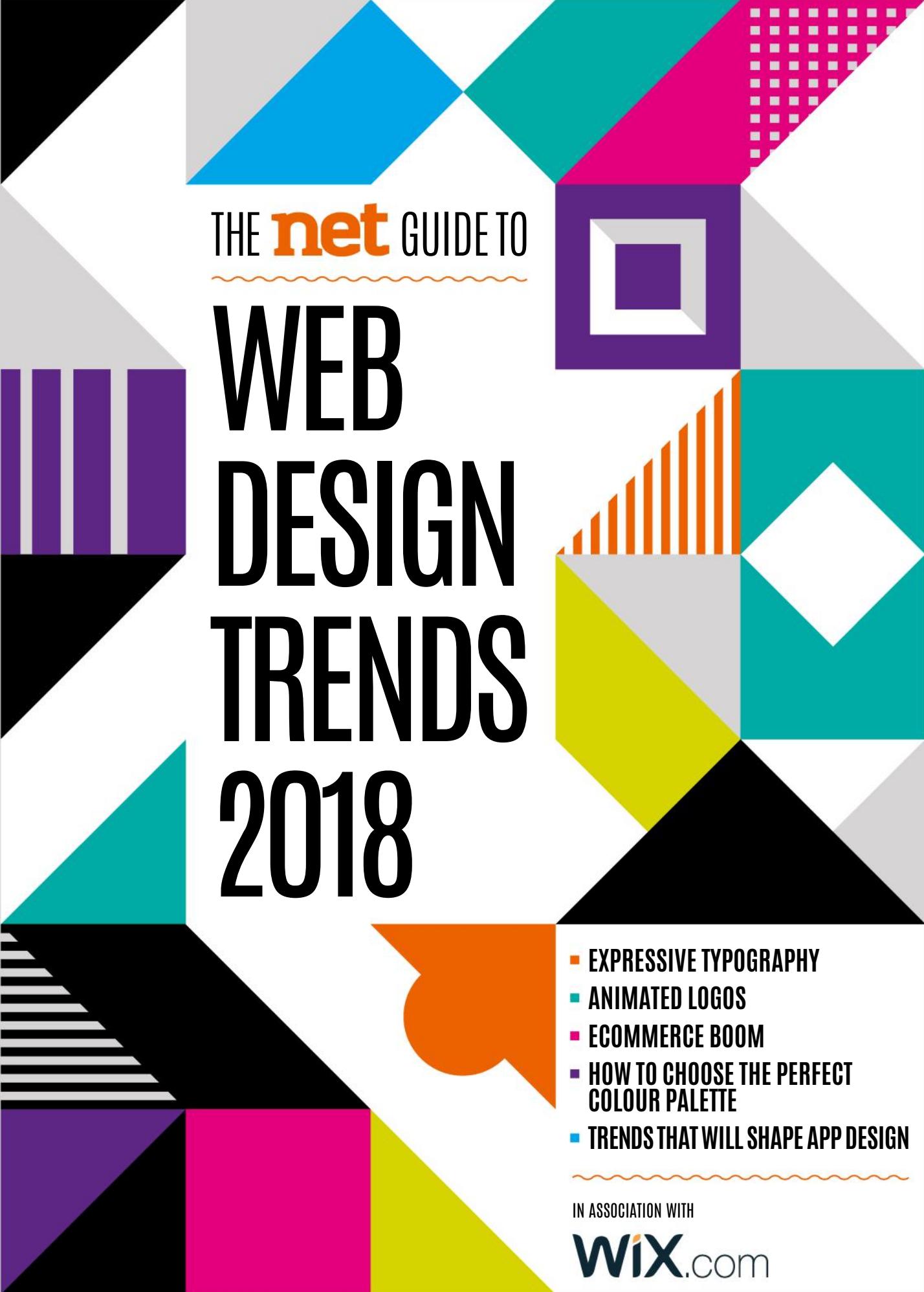
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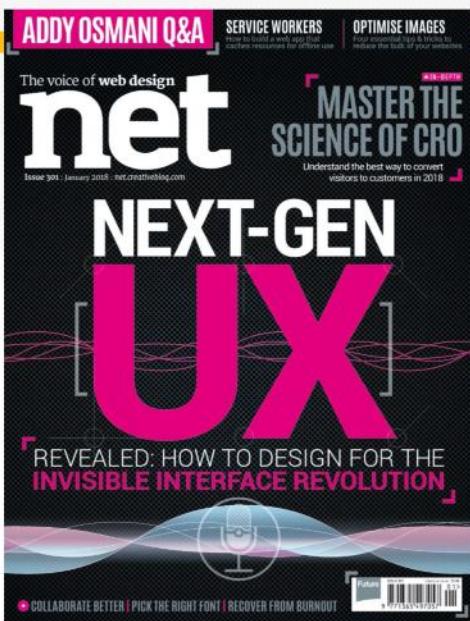
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EDITOR'S NOTE

What will the web look like in 12 months' time? That's the million dollar question. As web designers and developers we are obsessed with the latest trends and techniques – the need to stay on top of our game is a strong and necessary urge in such a competitive industry.

With that in mind, we've asked six professionals at the top of their game to tell you what's going to be hot in 2018. Bold typography, animated logos, data visualisation and invisible interfaces all feature heavily. Turn the page to find the biggest trends for 2018 as revealed by leading lights Chris Gannon, Matej Latin and Mike Brondbjerg et al.

Elsewhere, Pocket App's Design Director Jake Davis runs down the trends that will shape app design in the next 12 months, and we've got a great guide about choosing the right colour palette for your

next project – think big and bold in 2018 – from our partners Wix.

We hope the supplement gives you inspiration to create amazing experiences!



Philip Morris
Editor, net magazine
creativebloq.com/net-magazine

A NOTE FROM OUR PARTNER

At Wix, we believe that the web should be fun. The digital space is pretty much like a playground – a place where you can free your creative mind, coming up with endless ideas.

But like in every game, there are rules to follow. In the ever-changing world of web design, you need to keep up-to-date with the trends. More importantly: you need a platform that gives you the creative freedom to put them into life.

Millions of web designers trust Wix when it comes to creating the website that's right for them and their clients. Thanks to stunning design effects, top-notch professional features and a hassle-free coding interface, you too can invent without limits.

We wish you a good read and hope you'll find in these pages the inspiration you need to create the most cutting-edge websites in the coming year.



Liat Karpel Gurwicz
Head of Strategic Marketing
www.wix.com



WHAT WILL BE THE BIGGEST WEB DESIGN TRENDS IN 2018?

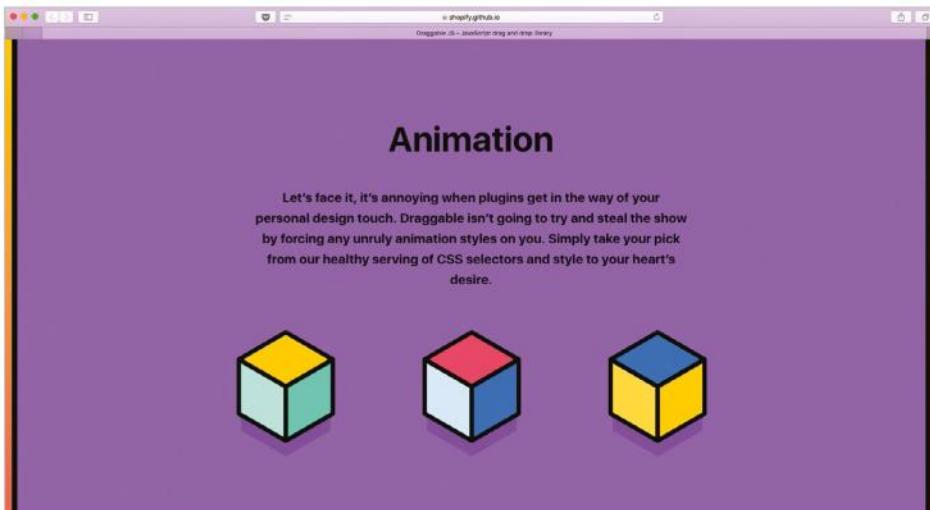
We ask industry experts what lies ahead for the web design world in the coming 12 months

As a web designer it's easy to fall behind the times. Trends come and go every year, and the briefs we get from our clients always reflects changing times. If we don't move quickly, we'll get left behind. 2018 will be no different. It can be a confusing beast to keep track of it all – how many design newsletters, Twitter pages and inspiration websites do you visit daily, for example? To give you a head-start we've compiled the ultimate list of what's going to be hot property in 2018. We've asked industry experts exactly what they think the fashionable trends will be next year, and some of the results are fascinating. To find out what web design will look like in the next

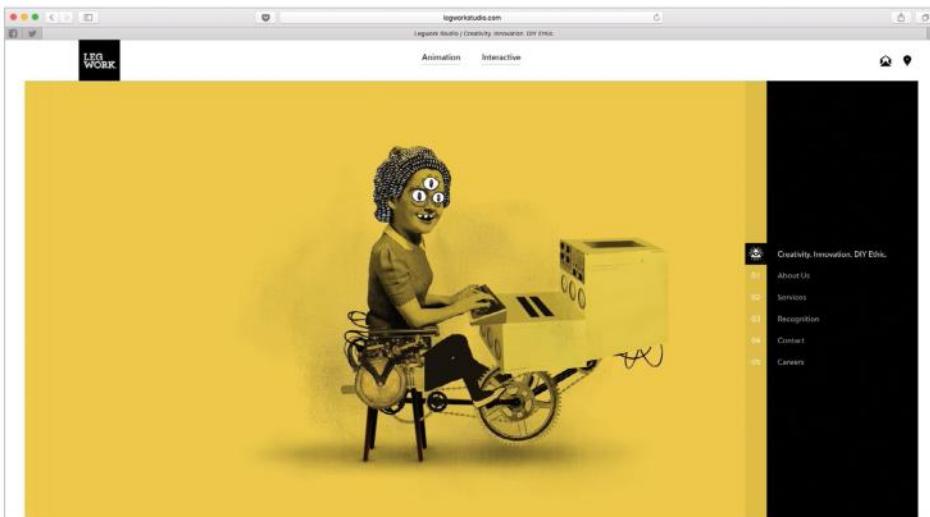
year, read on. Let's start with something fun...

ANIMATION

"Animation can play a huge part in making ideas and interfaces easier to understand," says Chris Gannon, interactive designer, consultant and animator (<https://gannon.tv>). "And in a world where everyone is in a hurry and time is short, animation can convey complex ideas in a short amount of time whilst at the same time engaging and informing." Gannon argues that there are two main factors aligning to make animation on the web the next big thing: the volume of creation tools available to designers and the increase in



Shopify's Draggable interactive animated site (<https://shopify.github.io/draggable/>) is bright, fun and subtly teaches you to use it



Chris Gannon picks out the bizarre animation work on Leg Work Studio's (<http://www.legworkstudio.com>) site as being quirky and creative



Tacky, randomly placed GIFs from the 1990s are so on point (and actually quite hard to get right), but Webflow's Interaction 2.0 (<https://webflow.com/ix2>) deserves a mention

browser performance. "There are more tools than ever to create animations," he said. "Many of these tools are aimed at designers, developers or other non-animators and have interfaces that are designed to simplify the complexities of building them. This opens up the playing field to more and more people and allows them to experiment with animation. This is pretty huge because historically non-animators have steered clear of the animation part of the project."

When you combine the availability of such tools with browser improvements it's easy to see why animation is going to be big in 2018. Today's browsers are exceeding 60fps, even on vector formats like SVG and mobile.

So what specifically in animation are we going to see more of in 2018? Animated logos is an obvious trend, and one that gives a company a big opportunity to enhance their brand further. "Animating a company's logo is a huge honour, and an even bigger responsibility," Gannon explains. "It's a visual representation of the company in a tiny space and if it's a good logo it packs in a lot of meaning." Expect more



"Shoe-horning an animation into a design rarely ends well"

Chris Gannon, interactive designer

Design trends 2018



"We need to retain simplicity instead of complicating things"

Cerven Cotter, Vehemence founder

scrolling animations too, and amazing mash-ups with AR technology and animation.

As with any trend it's important not to include it for the sake of including it – it's got to be right for your project. "We all have a responsibility to our audience to choose when and when not to use animation," says Gannon. "Does it enhance or otherwise contribute

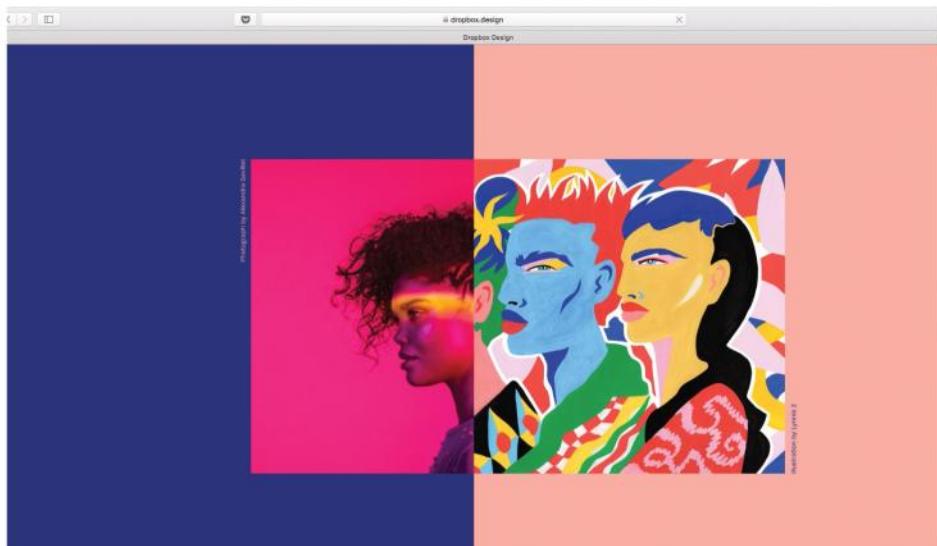
positively to the experience? My heart sinks when a client approaches me saying they want to 'sprinkle animations all over our app'. Shoe-horning an animation into a design rarely ends well because the animation has no purpose other than to titillate." But there's no arguing – when it's done well, animation can transform a good project to a great one.

FLAT DESIGN

Perhaps 2018's most obvious trend is the move to a flat design, highlighted by recent redesigns from Dropbox, Mastercard and Airbnb. Inspired by the



Airbnb was another major company to undergo a brand revamp in 2017. The flat, colourful design is most definitely one to watch in 2018



Dropbox has undergone the biggest design overhaul in its 10-year history, and the focus is on a flat design with bright colours and bold typography



Rachael Grocott Q&A

We chat to UVD's Product Designer about the work she'll be doing in 2018

What's going to be the biggest trend in web design next year?

I think animation is going to be big. Tools like Framer, Origami and Principle have appeared in a surge and allow designers to quickly mock up animations and interactions to really lift a UI.

What's exciting you personally in web design right now?

That technology is enabling us to be much more creative. CSS Grid is really shaking up how things can be laid out on the web, and then other techniques like masking and 'initial-letter' mean that we can be more creative with typography. Harking back to my uni days where I focussed on Flash, I also love that movement and animation is becoming part of my role again.

In your opinion, what sort of stuff are you going to be doing next year?

I think all of our customers are wanting something that really stands out from the crowd design wise, and as technologies and trends change so quickly, we're finding that our clients are looking for a long term partnership so that their product can continuously evolve. A lot of our clients also want to take advantage of very new technologies, such as AR, or machine learning, so as an agency that for us is really exciting.

“What we need now is awareness”

Matej Latin shares his thoughts on the current state of web typography

Typography is one of those forgotten arts that needs to be revived for the web. In my opinion, in the world where everyone can create content and everyone does typography, everyone should learn how to do it well. Does that mean including it as part of the school programs? Perhaps. But at the moment that feels far away.

On the bright side though, people who know how to do web typography well will stand out from the ones that don't. So it's a great way to set your work apart and move away from the grey shades of mediocrity.

Richard Rutter's *Web Typography* and my own *Better Web Typography for a Better Web* are two resources that can help web designers learn about web typography and how to do it well. There weren't as comprehensive and concise resources available before and I think they will have a major role in improving web typography.

What we need now is awareness. Make designers realise that typography is important and that they do need to learn how to do it well on the web. Including web developers is an essential part of that as they're the ones building websites.

I hope to finally see people moving away from the paragraphs set in thin typefaces, in light colours and with too much line height. It's a trend that is making the web hard to read and it needs to end.

mobile-first methodology, flat design serves to create websites that load quickly on mobile and marry smooth performance and a great UX. Flat design doesn't mean your designs will be boring or simply 2D dimensional. Utilising bright colours, clean and crisp edges, and lots of open space, flat design is a refreshing change from painfully slow image-based designs. With a flat design mantra you can afford more creativity in areas like typography – read more about that later on. This minimalistic trend will also have a big impact on your SEO. Search engines are prioritising data-light and fast-loading sites, so implementing a trendy flat design will not only create eye-catching websites, but also improve your page rank dramatically.

Cerven Cotter, founder of Vehemence (<http://www.vehemence.co.uk>), says in 2018 a “cleaner, more literal UI is important as it has the largest impact on the largest parts of the digital market.” He goes on to tell us: “Sure it might not seem cool to label every button clearly, but as grandma, granddad and your great aunt become more tech savvy, we need to cater to their needs – lower the barrier to entry. Nobody wants a ten point touch sequence to action something that a simple, clear call to action can solve. Literal simplicity.”

Coping with the trend for flat design shouldn't be too hard for designers, and Cotter argues that the movement contains good practices you should always follow. “It isn't a trend for the way I work, it is just an approach I've always



“It's a great time to be – or become – a type geek!”

Matej Latin, typography expert

typographic evolution, but slowly and surely, the desire for better typography on the web is growing and growing. Major companies now realise the importance of typography in helping to raise brand awareness. 2018 will be no different, and in fact we expect it to be a watershed year for typography and the web.

Matej Latin (<https://matejlatin.co.uk>), author of *Better Web Typography For A Better Web*, agrees. “Web typography has been a hot topic for the past few years which helps more and more

Utilising bright colours, clean and crisp edges, and lots of open space, flat design is a refreshing change

followed,” he said. “If it does what it says on the tin, then it will do it. We need to retain simplicity instead of complicating things – the world is complicated enough already.”

CREATIVE TYPOGRAPHY

Originally the web ignored centuries of

designers realise what it actually is and how important it is in web design,” he said. “We're slowly starting to move away from the ‘merely choosing fonts typography’ and starting to adopt typography as a fundamental part of websites. With more and better quality fonts available to designers and

more resources to learn from, I expect a major shift."

With the trend for 'flat' web design, designers will be able to unleash their creativity with typography. Expressive typography will offer the ability for individual site design to be noticed among the masses. Latin believes the availability of tools that enable more people to become type designers, and the OpenType format, have a major role in helping make artistic and playful fonts so popular. "Why the move towards more artistic-style fonts in the first place?" he asks. "I can't be sure but it feels like type designers and foundries, especially the indie ones, are trying to move away from the 'boring old' serif and sans serif typefaces. Creating artistic typefaces is a way to do that and that's great. We need more variety on the web."

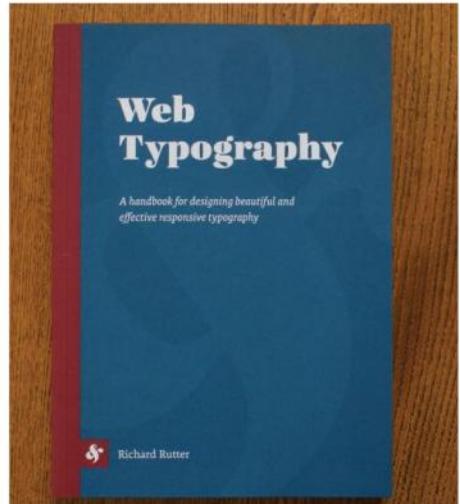
Famous rebrands at the end of 2017 from the likes of Airbnb, 99 Designs and Dropbox have all championed round geometrical sans serif typefaces, a trend Latin sees going from strength to strength. "Geometrical sans serif typefaces seem to be very popular at the moment and I believe they will continue to be so" he said. "Typefaces



"We will soon be able to buy anything we want, no matter where we are"

Chris Dowson, Dowson Design Co

Slowly and surely, the desire for better typography on the web is growing and growing. Major companies now realise the importance of typography in helping to raise brand awareness



Richard Rutter's *Web Typography* book is a great resource to help web designers learn about web typography and how to do it well

Futura

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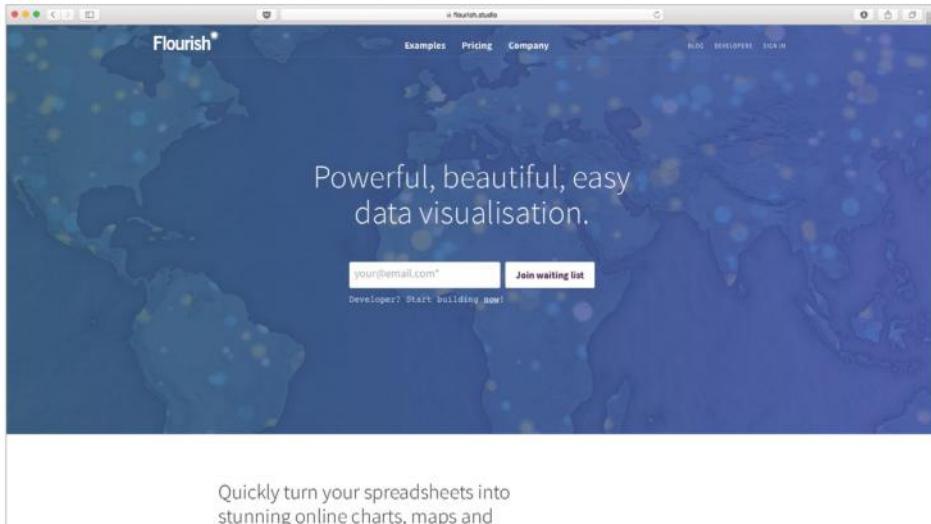
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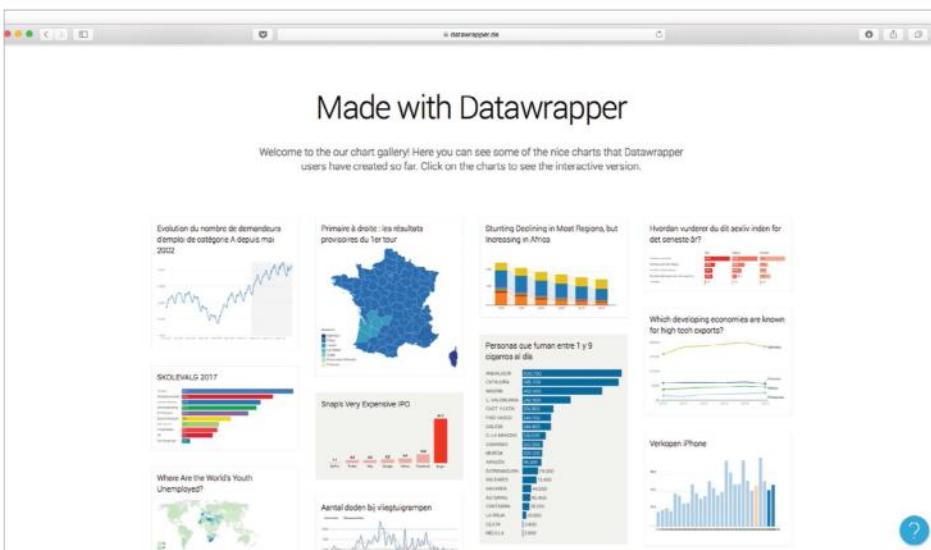
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n o p q r s t u v w x y z
0 1 2 3 4 5 6 7 8 9

Futura has been one of the most popular fonts in the past few years, along with Proxima Nova and Brandon Grotesque, and we don't expect that to change



Flourish's website is a great place to go to see examples of great storytelling through data visualisations



Datawrapper bring data visualisations to the masses, making it easier to produce eye-catching charts

The expansion of UX roles in the industry has led to much more considered, user centric design, and prototyping software will continue to make life easier

like Futura, Proxima Nova and Brandon Grotesque have been among the top 5 used typefaces on the web for a couple of years already and I expect them to remain there. Overall we'll see more variety in typefaces and more high-quality typefaces as well. It's a great time to be – or become – a type geek!"

ECOMMERCE BOOM

Black Friday. Cyber Monday. What next? It's the trend that's only going to get bigger and bigger next year as more and more of your clients explore the possibilities that a strong eCommerce platform offers. Owner of Dowson Design Co (<https://madebydowson.com>), Christopher Dowson, explains: "We are

consumers by nature. We always need more things... and the internet is full of things. Sites like Deliveroo and Just Eat own no restaurants, but can bring almost any food right to our doors. Amazon owns no shops but we can have almost anything delivered next day. We're only just beginning to see the possibilities of eCommerce now we are moving away from the traditional storefront-on-the-web business model."

Email will continue to play a huge role in eCommerce strategy, too. "It's easy to track, easy to trigger and crucially for 2018 and onwards, much easier to personalise, and I'm not just talking about putting a name in a template," Dowson told us. "Your shopping habits will inform the type of emails you receive – tailored to include products you are more likely to buy. Even cart abandonment emails – a godsend for any retailer – will be triggered to get to you at the time you're most likely to be receptive to completing the order. All based on how, when and where you shop."

As always, your customers will be key, and removing waiting times will be a big consideration, especially for the world's biggest brands. "We're already seeing Amazon delivering in hourly slots in key locations," says Dowson. "The culture of instant gratification will continue to permeate retail as an industry, so expect some delivery wars between big retailers – and take advantage of them! It's early beginnings, but we will soon be able to buy anything we want, no matter where we are."

The expansion of UX roles in the industry has led to much more considered, user centric design, and prototyping software like Sketch and InVision will continue to make life easier for designers. Apart from email, expect eCommerce in social media to become the norm.

As Dowson explains: "Facebook is gradually rolling out the ability to buy items through Messenger, and some traditional bricks-and-mortar retailers are even offering a personal shopper experience through FaceTime and Facebook Live. You can now buy your



“Data viz also needs to mean clear, transparent and trustworthy”

Mike Brondbjerg, Kultur Design

drinks and have them delivered to your table at certain pub chains, which has knock-on effects you might not have even considered – namely, more time with your friends.”

DATA VISUALIZATIONS

Data is the new world currency and the internet acts as its very own trading desk, or so the saying goes. As consumers we are swarmed with data in our everyday lives to the point

As designers it's becoming harder and harder to present that data with any kind of originality. How can you structure and categorise data and find ways to process, understand and present it in a convenient, fast and easy way? Brondbjerg, one of the UK's most high profile data viz experts, believes production quality will increase, but warns “in the age of fake news, high-quality data viz also needs to mean clear, transparent and trustworthy.”

He notes that software like Sketch has huge potential to make data visualisation processes more accessible to designers. “Libraries like D3.js are great but can be a little intimidating for non-developers,” Brondbjerg told us. “But there are lots of platforms now that will import, visualise and host your data projects. Platforms like *datawrapper.de* are great for easily producing a range of standard charts, and Flourish (<https://flourish.studio>) are doing great things with journalistic, storytelling style visualisations.” If you want to grab new business in 2018, it’s time to master these tools and techniques.

PLANNING AHEAD

While these look like being five of the biggest trends in web design in the coming 12 months, it’s important not to aimlessly use them for the sake of using them because they’re fashionable.

How can you structure and categorise data and find ways to process, understand and present it in a convenient, fast and easy way?

of saturation – and 2018 will be no different. So is it time for data and design to finally meet? “I hope so, and beyond simply just serving up personalised adverts on websites,” says Kultur Design’s Mike Brondbjerg (<http://www.kultur.design>). “I would love to see data used more as a creative material early in the design process. Data is everywhere, and so the need to shine a light into that data through visualisation is only going to increase.”

We aren’t advocating a one-size-fits-all approach to web design either. The beauty of the work the best designers do is individuality and creativity. Each project we undertake is different, and our design approach should wholeheartedly recognise that. Take onboard the trends of the time, but don’t get bogged down trying to shoehorn them in. Instead, be inspired by them and you can’t go wrong.

Here’s to 2018. We can’t wait to see what you create.

2018’s hottest resources

Where should you go in 2018 to keep up with the key developments in web design and development?

A List Apart

<https://alistapart.com>

A List Apart explores the design, development and meaning of web content, with a special focus on web standards and best practices. You’ll find articles here from some of the leading lights of web design (Rachel Andrew, Aaron Gustafson and Laura Kalbag etc), and you’re sure to find a host of great inspiration for the year ahead.

Creative Bloq

www.creativebloq.com

For art and design inspiration, our sister site Creative Bloq should be number one on your list of bookmarks. You’ll find all the latest web design and development news, as well as highlights from previous issues of this very magazine, and cutting-edge advice on all the latest trends, tools and technologies.

Sidebar newsletter

<https://sidebar.io>

The place to go for all your daily web design news, Sidebar is our favourite email newsletter. Sign up for free and get all the latest news straight to your inbox at 5pm every day. This trusted resource features the best links about UI design, typography, CSS, user research, and all other facets of design.



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 “Trends pass; creativity remains,” would have said Coco Chanel – had she been a web designer. A lot of new exciting trends will appear in 2018. Some of them you’ll follow, and others less. In any case, you’ll want the possibility to accurately reflect your vision throughout the websites you create. Wix gives you just that: the freedom and features to tell your story exactly as you’ve imagined it.

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Thanks to our constantly evolving platform, Wix enables you to keep on the ball with every design trend. Take videos, for example. They account for almost 80% of all internet traffic.

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Weather API

```
import fetch from 'wix-fetch';
let location = $w('#city').value;
fetch('https://... ' + location +
'...')
.then(res => res.json())
.then(json => {
  let temp = json...code;

$w('#tempBackground').background.src =
  getBackgroundForTemp(temp);
})
```

42 | VERY COLD

In seconds, you can create your own channels, uploading native files or syncing with YouTube, Facebook and Vimeo. Animations will also continue to pop up in 2018, and you can add stunning ones to your website, without a line of code.

A PLATFORM BUILT FOR PROFESSIONALS

On top of these visual assets, we've prepared some handy features to simplify your workflow. As a designer, communication with colleagues and clients is a key part of your daily routine (whether you like it or not). With Wix, you can share your work in progress with just one click, to receive feedback in real-time.

You can also provide your clients with functionalities adapted to any type of business, like a powerful management system for eCommerce and retina-ready image quality for the most demanding photographers.

Finally, you may ask: if a website is not found on Google, does it really exist? Make sure your websites rank high on search engines with our leading SEO capabilities. So, are you ready to play?

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WIX.com

BREAKING THE BOUNDARIES WITH WIX CODE

Wix and code, in the same sentence? Yes - and you should have a look at the result. For all of you who wanted to take your website to the next level, we've just launched Wix Code.

It offers advanced code capabilities and an intuitive interface that makes it

extremely fast to master and use. Web applications, dynamic pages, database collections... if you can name it, you can code it.

All of this, of course, is combined with the stunning visual components of the Wix Editor, and is fully SEO compatible.



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Design, web design

The right color palette

* COLOUR

CHOOSE THE RIGHT COLOUR PALETTE FOR A WEBSITE

Blake Stimac explains how to use colours to your advantage in 2018, with the help of psychological theories, online tools and more

While there are many steps in creating a website, branding is one of the most important. It's the way others perceive what your identity is about. First impressions are the strongest when it comes to how people feel about a business, so it's obvious you need to put your best foot forward in every way.

A good first step in branding is choosing an approachable and relatable colour palette for your brand to apply on your website and across all your other marketing materials. Even though choosing attractive branding colours can seem a bit tricky, don't fret! I'm here to show you the steps to picking the most appropriate colour palette for your needs in 2018.

KNOW WHAT EMOTIONS COLOURS EVOKE

You may have an idea of what you'd like the colour

palette for your business to be, but before you set anything in stone, try to take a look at what the colours you're thinking of using actually mean.

"Do the colours convey the right emotions and are they attractive to my target market?" might seem like a silly question, but you can get a lot of insight by looking into the psychology of colours and emotion. Think of the logos of some companies you know, like Coca Cola, Facebook and Apple. They are three incredibly recognizable brands, all of which you can likely recall the colour of their logos as red, blue, and white.

While a logo's colour may seem like a casual choice made by the brand, you can be assured that the company selected it for reasons other than simple colour selection. The colours used in the logos of these

brands exude what they stand for, or at the very least, what they're trying to stand for.

EXPERIMENT WITH ONLINE COLOUR PALETTE TOOLS

Now that you know a thing or two about colours and emotions, it's time to apply what you've learned by playing around with online colour palette tools:

COOLORS.CO

<http://coolors.co/>

Coolors is a great place to start. It offers a wide variety of tools for adjusting the palette just the way you want it. In addition, you can export your final creation in many different formats so you can use it virtually wherever you want.

Coolors isn't just a tool to create a colour palette, it also allows you to view other completed creations from other users so that you can draw inspiration. The Explore section has hundreds (if not thousands) of palettes you can view, save, and edit yourself. Even better, Coolors is available on desktop computers, and as an iOS application, an Adobe Photoshop and Illustrator add-on – and even a Google Chrome Extension for easy access.

Coolors isn't just a tool to create a colour palette, it also allows you to view other completed creations from other users

CANVA COLOR PALETTE GENERATOR

<https://www.canva.com/color-palette/>

Canva offers an interesting take on generating colour palettes based on a photo you upload to it. While other tools offer similar options, Canva's couldn't be easier to use.

If you have a photo that encompasses the overall feeling that you'd like to bring to your brand, you can simply upload it to Canva's generator and it will instantly create a palette consisting of five colours, each with its corresponding hex code for reference. Unfortunately, this is where the usefulness of Canva's offering ends, as this is all you can do with its palette generator.

You cannot adjust the colours of the palette. The only other options you have are to copy the hex values provided or upload another photo.

IN-DEPTH

THE PSYCHOLOGY (AND MARKETING) OF COLOURS

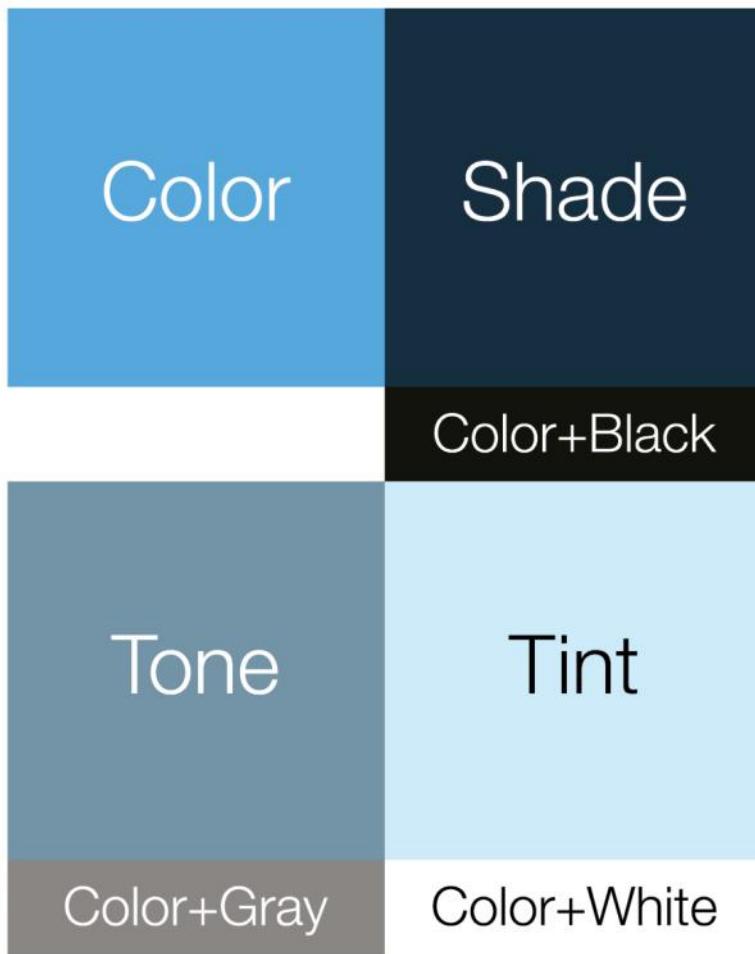
Here's a rundown of some basic colours and what emotions they can evoke:

Blue - Trustworthy - Dependable - Professional	Green - Peaceful - Balance - Growth	Orange - Friendly - Welcoming - Cheerful - Confidence	Black - Classic - Elegance - Powerful - Fearful
Purple - Royalty/luxury - Creativity - Imagination	Yellow - Happiness - Optimism	Red Excitement Youthful Bold Urgency	White - Simplicity - Clarity - Purity

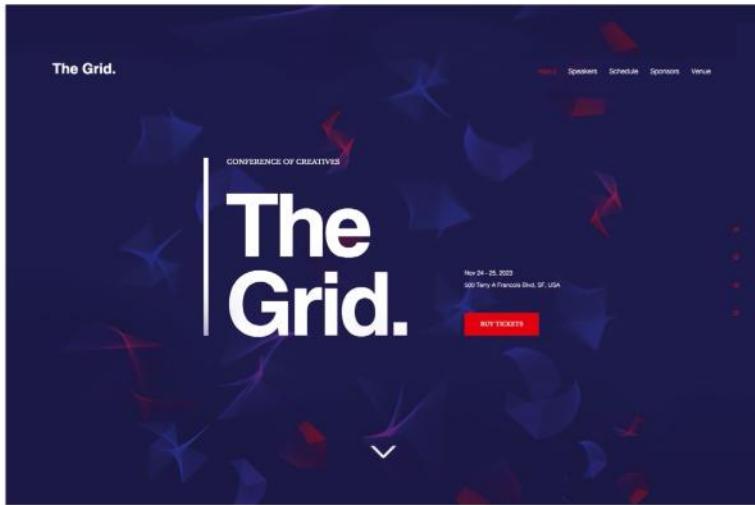
Let's have a look at how specific brands used these basic colours to their advantage:

- Facebook. The largest social network in the world has been the centre of privacy concerns for a majority of the time it's been around. Its logo, however, appears to be designed to counter this issue, using a peaceful blue tone. Blue is the colour of trust and dependability, which makes it an important colour for a website that holds such sensitive information. It is also one of the most popular colours around and one of the easiest to look at.

- Red can create a sense of urgency, which is why you'll see many 'Sale!' signs either written in red or behind a red backdrop. Founded in 1892, Coca Cola has been an every-day name for quite some time and it's almost impossible to forget its logo. The red background with the cursive writing hasn't changed much since the 1950s and for good reason: it works. The colour red evokes excitement and energy, and it's said that the colour can even increase pulse rates.



The primary colours are the colours that you will want your target audience to recognise you with



Choose the right accent colours with the Design Conference template by [Wix.com](#)

► ADOBE COLOR CC

<https://color.adobe.com/create/color-wheel>

If the Ferris wheel is your favourite theme park ride, then you'll love this colour palette generating tool. Decide on your colour scheme with a giant colour wheel you can play with, or alternatively go for the more conformist method and use the colours from a photo you uploaded.

COLOURCODE

<http://www.colourco.de>

Not sure about your colour preferences? Colourcode hits you right in the face, showcasing a background that changes colours with your cursor movement. Besides that, this tool offers various options for saving a colour alongside different categories for the palette (analog, triad, quad, monochrome, monochrome light etc).

Your dominant palette colours should either complement or contrast well together

CHOOSE YOUR PRIMARY PALETTE COLOURS

Now that you're (hopefully) feeling inspired enough, you can begin choosing your primary or 'dominant' palette colours. These are the colours that you will want your target audience to recognise you with. They will adorn your website and business cards, so it's important to get them right. While it's not imperative, you'll most likely only want two primary colours, with the others left as accent colours, which we'll cover later on. It's also important to note that out of your two dominant colours, one will be used more than the other when it comes to applying your palette to different elements on your design, whether it be a website, banner or anything else.

First and foremost, your dominant palette colours should either complement or contrast well together, and neither should outshine one another. If they do, you can play with tints, tones and shades to find a happy medium between the two. Here's a quick explanation of these last terms:

Tones: Mixing grey to a pure colour.

Tint: Mixing white to a pure colour.

Shades: Mixing black to a pure colour.

This isn't a step that's to be rushed, as these will be the most defining colours of your brand that show

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60% of white, 30% of black and 10% of blue is used in this Business Advisor template by Wix.com

people what it's all about. You'll be happy that you spent the extra time finding the perfect colour values.

CHOOSE YOUR ACCENT COLOUR(S)

Accent colours play an incredibly important role, especially for your website. They're supposed to draw your viewer's eyes into something you want to highlight. A poor choice can make people miss what's essential for you. Accent colours are usually bolder than your primary colours, so it's best to ensure that there's a high contrast between them.

For your website, accent colours are best applied to elements like your navigation menu, call to actions and other crucial items that you would like to showcase. A great example of a successful accent colour application can be found in the Design Conference template by Wix.com. The red accents on the menu show you what section of the page you are on and the bright Buy Tickets button shows a call to action begging to be clicked.

APPLY WITH THE 60-30-10 RULE

With your completed colour palette for your business, it's time to give yourself a pat on the back, but you're

not done just yet. The way you actually apply your colour scheme matters, and you can let the popular 60-30-10 rule guide your way. This rule is rather simple to explain, in that you will use 60% of your primary colour, 30% of your secondary colour and 10% of your accent colour. When it comes to web design, you can rework the rule as 60% negative space, 30% content, and 10% 'call to action' elements.

Still need to get a working image of the rule? MMI Creative recommends to "think of a man in a business suit: 60% is the slacks and jacket, 30% is the shirt, and 10% is the tie" (<http://mmicreative.com/the-60-30-10-rule/>). By following this rule, you will be able to achieve balance both in colour and content for your website. ■

The way you actually apply your colour scheme matters, and you can let the popular 60-30-10 rule guide your way



*APP DESIGN

TRENDS THAT WILL SHAPE APP DESIGN

Jake Davis looks at what lies ahead for the world of app design in 2018

2017 is over and it's time to consider the future of app design. Apps are being adopted more and more in the workplace, and with every success and failure we are starting to notice certain successful trends appearing. These trends have no doubt begun shaping the world of app design and will continue into 2018.

INVISIBLE INTERFACES

In 2018 our thumbs will be able to rest as our vocal chords take over app-use duties. This is thanks to a rise in Voice User Interfaces (VUIs). VUIs have already begun to be implemented by big companies, like Apple's Siri or Microsoft's Cortana, and going forward we will see them pop-up more and more. According to a report by Gartner, in 2018 30 percent of our interactions with technology will happen through conversations. Now, it can never be a full replacement for GUIs (Graphical user interfaces) as there are

some situations where we won't be able to speak, or the commands required might be too intricate for VUI to handle. But, having the option for both styles of input may soon become an industry standard.

DO IT YOURSELF

Everyone is unique and in the past, this has made it hard to make an app that works for everyone. Some people are more analytical and want to see a lot of data and options on their screen, while others prefer simple and large buttons that make navigation clean and easy. As the UX is such a vital part of designing an app it is important to make a UI that anyone can use. Now thanks to significant progress in AI and machine learning it has become possible for full-on customisation of apps based on the user's personal data. The designers now can hand the tools over to the user and let them personalise the app in a way that speaks to them.

DEVICE CRISIS
When people think of apps their mind often defaults to smartphone apps and a few years ago this was fine. Things have changed since then and continue to do so thanks to the rise of Internet of Things (IoT) devices. Now a person's mobile device isn't their only point of quick access to the internet. Users aren't necessarily going to default to a phone anymore. To keep up with this, app designers will need to focus on Omnichannel UX to bring consistency into this ever-growing device population.

FATHER TIME APPROVED

Time is possibly the most valuable asset of a person's daily life. Nobody wants to waste their time and in this increasingly impatient society more people want apps that can help them achieve their goal as fast as possible. This ties-in with the earlier point about user customisation. Designing your app with time-saving features in mind is key to user satisfaction.

BRAVE & BOLD COLOURS

Our world is made up of an amazing palette of colours but often in corporate apps we find the same boring black, white and blue every time. This may have been done to look professional but to many it has been done to death and comes off more as boring and unoriginal.

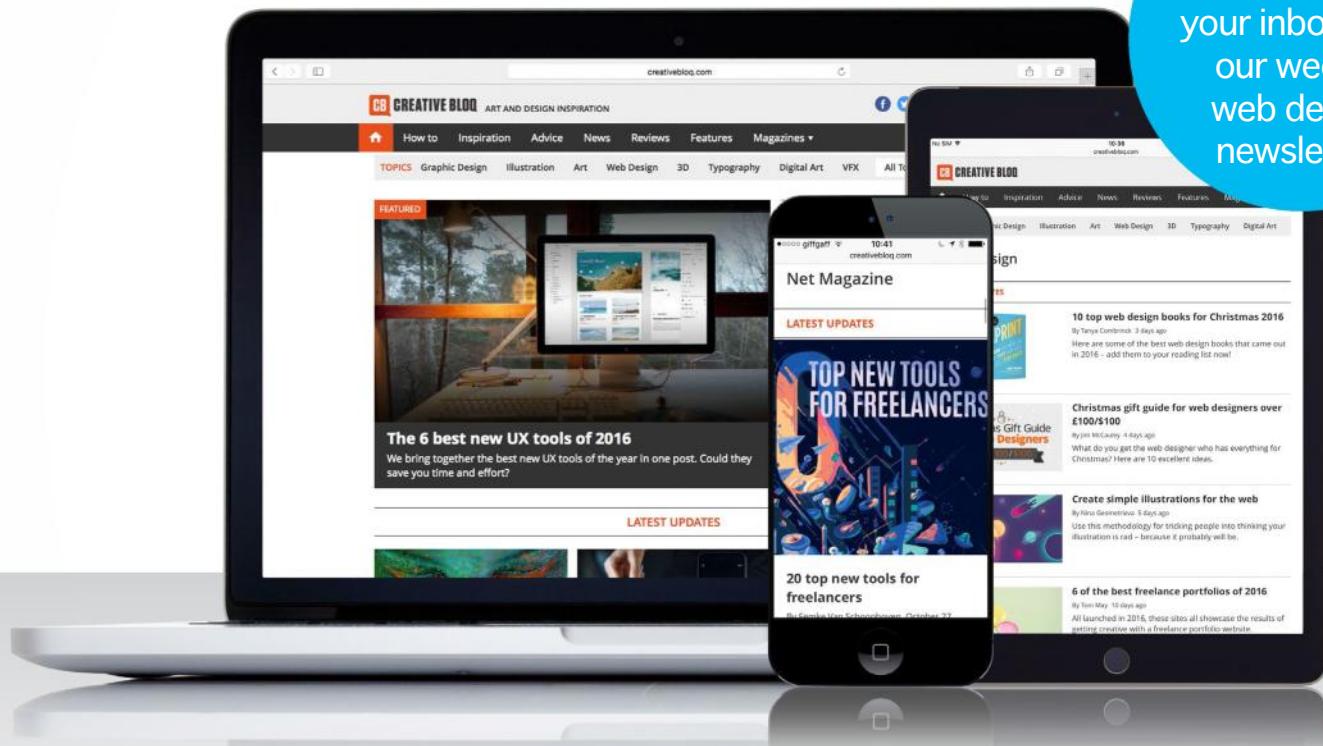
Colour is a massive aspect of design as colours can bring forth specific feelings in the user and help guide them throughout the app. Colour may sound like a simple tool, but it is an incredible one and shouldn't be understated.

These five industry trends are shaping the app design world and I predict that next year the apps that see the most success will utilise not just one but all of these design choices. They all help to keep retention, improve productivity, provide great user-experience and streamline the process. For anyone jumping into the app design industry, these are the points that need to be at the forefront of the mind for a successful app to be produced. ■

PROFILE
* Jake is the Design Director at Pocket App. A UI/UX specialist with a keen eye for mobile interfaces, he is responsible for user experience, design and leads the creative team in the UK office.

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