Learn how to build a chatbot interface

## The voice of web design

# BEST PRACTICE RULES FOR DEVELOPERS

Workflow tips to future-proof





#### Business Pro

Host blogs, businesses, or communities on one fast multisite package.

- 3 websites
- Unlimited space
- Unlimited bandwidth
- Unlimited emails
- PC Pro Recommended

From

£2.49

per month

Use the code: YOURBUSINESSHOSTING

at checkout



#### Reseller Pro

Everything you need to support your clients' domains, emails, and more.

- Unlimited websites
- Unlimited space
- Unlimited bandwidth
- Unlimited emails
- Entirely your brand

From

£9.99

per month

Use the code: YOURRESELLERHOSTING

at checkout

Matthew Wall - Somewhat Media is a Heart Internet Reseller Pro c

www.heartinternet.uk



\* WELCOME

## EDITOR'S NOTE

You'll probably have noticed there's a different face smiling out at you from the top of the page. Having worked on the net team for a couple of years, I took the reins as acting editor at the start of January. And despite the barrage of new challenges being thrown my way, at the back of my mind has always been what on earth I was going to write in this welcome note.

Thankfully, in the midst of my panic, I came across some tweets by Sara Soueidan. "A mistake I made this year is avoiding writing articles because I thought they weren't in-depth enough or simply not worth sharing ... Not every article needs to be a full-fledged tutorial" (netm.aq/soueidan-290).

Her comments struck a chord with me: there's something to be said for just getting something down, rather than waiting until it's perfect. If you want to write, just get on and do it.

If you're struggling to get going, perhaps our Cover Feature will inspire you. We asked Alex Duloz and Katy Watkins to immerse themselves in the world's biggest brands and uncover the secrets behind their success. Flip to page 68 to see what they found out (it's not as complex as you might think).

Ruth Hamilton, acting editor @ruthehamilton

Enjoy!

### FEATURED AUTHORS

#### KATY WATKINS



t: @\_katywatkins

Katy joins ex-Pastry Box partner Alex Duloz to uncover the design secrets of the world's leading brands. Turn to page 68 to find out what they learned w: katywatkins.com

#### DAVE STEWART



In the first of a two-part series, full-stack developer Dave runs through some best practices to help you become a more futurefriendly developer (page 76)

w: davestewart.co.uk t: @dave\_stewart

#### MATTHEW SMITH



Matthew is the founder of Really Good Emails, dedicated to the art of great product emails. On page 44, he rounds up some of the best examples w: www.reallygoodemails.com

t: @whale

#### LUIS RODRIGUEZ



Luis is a UX and UI developer and designer. From page 106 he explains why chatbots are the next goldrush, and shows vou how to build vour own w: www.uxcodeline.com

t: @UXCodeLine



Future PLC, Quay House, The Ambury, Bath, BA1 1UA +44 (0)1225 442244

🍏 (@netmag 🗗 /netmag 🔤 flickr.com/photos/netmag 🔀 netmag@futurenet.com 🔟 net.creativeblog.com 🔌 medium.com/net-magazine

#### **EDITORIAL**

Acting editor Ruth Hamilton ruth.hamilton@futurenet.com Art editor **Rebecca Shaw** rebecca.shaw@futurenet.com

#### **EDITORIAL CONTRIBUTIONS**

Tanya Combrinck, Cerven Cotter, Shwetank Dixit, Alex Duloz, Ian Evenden, Jacinte Faria, Seth Holladay, Sam Kapila, Steve Kinney, Tom Krcha, Kevin Lamping, Oliver Lindberg, Tom May, Scott McCaughey, Jim McCauley, Jenny Mullins, Christopher Murphy, Alan Reed-Osborne, Adam Rees, Sam Richard, Luis Rodriguez, Julia Sagar, Matthew Smith, Marco Sors, Dave Stewart, Nishant Totla, Marcin Treder, Alex Turner, Katy Watkins, Ollie Wells

#### ART CONTRIBUTIONS

Chris Hedley, Ben Mounsey, Robert Pizzo, Megan Reddi, Bryan Tan, Elly Walton

#### MANAGEMENT

Creative director: magazines Aaron Asadi aaron.asadi@futurenet.com, Editorial director: games, photography, creative and design Matthew Pierce matthew.pierce@futurenet.com, Group art director Rodney Dive rodney.dive@futurenet.com

#### **CREATIVE BLOO**

Editor Craig Stewart craig.stewart@futurenet.com, Associate editor Kerrie Hughes kerrie.hughes@futurenet.com,

Staff writer **Dominic Carter** dominic.carter@futurenet.com

COMMERCIAL Commercial sales director Clare Dove clare.dove@futurenet.com, Senior advertising manager Michael Pyatt michael.pyatt@futurenet.com, Director of agency sales Matt Downs matt.downs@futurenet.com, Head of strategic partnerships Clare Jonik clare.jonik@futurenet.com

CIRCULATION Trade marketing manager Juliette Winyard juliette.winyard@futurenet.com

PRODUCTION Production controller Nola Cokely nola.cokely@futurenet.com

Head of production UK and US Mark Constance mark.constance@futurenet.com

LICENSING Senior licensing and syndication manager Matt Ellis matt.ellis@futurenet.com

#### **NEXT ISSUE ON SALE 23 FEB 2017**

All contents copyright © 2017 Future Publishing Limited or published under licence. All rights reserved. No part of this magazine may be reproduced, stored, transmitted or used in any way without the prior written permission of the publisher. Future Publishing Limited (company number 2008885) is registered in England and Wales. Registered office: Registered office: Quay House, The Ambury, Bath, BA1 1UA. All information contained in this publication is for information only and is, as far as we are aware, correct at the time of going to press. Future cannot accept any responsibility for errors or inaccuracies in such information. You are advised to contact manufacturers and retailers directly with regard to the price and other details of products or services referred to in this publication. Apps and websites mentioned in this publication are not under our control. We are not responsible for their contents or any changes or updates to them. If you submit unsolicited material to us, you automatically grant Future a licence to publish your submission in whole or in part in all editions of the magazine, including licensed editions worldwide and in any physical or digital format throughout the world. Any material you submit is sent at your risk and, although every care is taken, neither Future nor its employees, agents or subcontractors shall be liable for loss or damage



Future is an award-winning international media group and leading digital business. We reach more than 49 million international consumers a month and create world-class content and advertising solutions for passionate consumers online, on tablet & smartphone and in print.

Future plc is a public company quoted on the London Stock Exchange (symbol: FUTR). www.futureplc.com

Chief executive Zillah Byng-Thorne Non-executive chairman Peter Allen
Chief financial officer Penny Ladkin-Brand

Tel +44 (0)207 042 4000 (London) Tel +44 (0)1225 442 244 (Bath)





We are committed to only using magazine paper which is derived from well managed, certified forestry and chlorine-free manufacture. Future Publishing and its paper suppliers have been independently certified in accordance with the rules of the FSC (Forest Stewardship Council).



#### **APPS USED**

Google Docs, Photoshop, Dropbox Paper, FutureSource, Illustrator, InDesign, CodePen, Slack

#### PAPER

**COVER** PaceSetter Gloss 250gsm P3-82 UltraMag Plus gloss 90gsm P83-114 Grapholvent 70gsm

#### **TYPEFACES**

Antonio, Share Tech, Merriweather, Titillium Web

# Next-Gen Virtual Private Servers



**Free UK Technical Support** 



## 



**FEED** 

#### SIDE PROJECT OF THE MONTH

Nash Vail on his app Chronus, which helps you stop procrastinating online

#### **CLIENTS FROM HELL**

The latest in our series of nightmare clients

#### **BEYOND PIXELS** 18

Sara Soueidan on her love of drawing

#### **NEED LIST** 19

Web stuff we want this month

#### **EVENT REPORT**

21

24

**Issue 290**: March 2017: net.creativeblog.com

Scott McCaughey reports from DotCSS



#### **UPPING THE PACE**

Marcin Treder explains how UXPin altered its workflow to speed up progress

#### INDIA'S ONLINE REVOLUTION 26

Shwetank Dixit looks at issues surrounding India's skyrocketing online population

#### **HEROES** 35

Christopher Murphy on how we can learn from our heroes, to build a clear vision

#### Q&A 37

Productivity coach **Shawn Blanc** explains why quantity leads to quality

#### **BIG QUESTION** 38

We ask a panel of experts: who has most influenced your career in web design?

#### **DESIGNER NO.1** 40

Jenny Mullins discusses the pros and cons of being a company's first design hire

\* FEED

#### WORKSPACE

16



Jacinte Faria takes us around Stink Studios' Los Angeles home, complete with oversized plants and a bridge to nowhere



\* VOICES

#### **INTERVIEW**

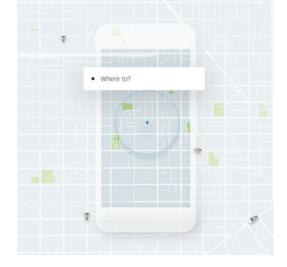
30

Design researcher Jennifer Brook reveals why she said goodbye to freelance life, and shares her vision for a better work culture



SUBSCRIBETO NET TAKE ADVANTAGE OF THE PRINT AND DIGITAL BUNDLE

Turn to page 22 to find out more AND SAVE UP TO 58% Want the Pro package? Turn to Page 29



#### \* REGULAR

#### **GALLERY** 44

In this newsletter special, Matthew Smith takes a closer look at the brands creating emails worth reading



## **FEATURES**

#### DESIGN SECRETS OF BIG BRANDS 68

Alex Duloz and Katy Watkins explore the design secrets driving big brands like Facebook, Google and Netflix

#### **DEVELOPING DEVELOPERS**

Dave Stewart offers some insights to help you ensure you aren't leaving a trail of technical debt in your wake

76

96



#### \* PROJECT

#### **CREATE A 3D SCENE USING MATRIX3D**

Marco Sors shows you to transform DOM elements with

the matrix3d CSS property

Look out for the video icon in the tutorials section for screencasts created by the authors

### REGULARS

#### **NETWORK**

8

The latest mail, tweets, posts and rants

#### **EXCHANGE**

10

Varya Stepanova and Ada Rose Edwards share their advice

## **SHOWCASE**

#### **DESIGN CHALLENGE**

52

Three designers mock up traders' websites

#### **FOCUS ON**

Tables are back for 2017, writes Sam Kapila

#### **PROFILE**

58

Multi-talented NYC designer Catt Small

#### **HOW WE BUILT**

64

Bareface's attention-grabbing microsite to launch Myriad furniture

### **PROJECTS**

#### **ELECTRON**

84

Steve Kinney shows you how to build a notes application with Electron

#### **ADOBE XD**

90

Tom Krcha gives a tour of the exciting new features in Adobe XD

#### **DOCKER**

94

Nishant Totla introduces the tool that started the container revolution

#### **WEB STANDARDS**

101

Sam Richard takes a look at the new tricks Houdini has up its sleeve

#### **VISUAL REGRESSION TESTS** 102

**Kevin Lamping** runs down the five best visual regression testing tools for 2017

#### **CHATBOT INTERFACES**

106

Chatbots are the next gold rush - start shovelling, says Luis Rodriguez

#### **ACCESSIBILITY**

114

Make sure your app is as accessible as its desktop equivalent, says Seth Holladay

## MIHK

Mail, tweets, posts and rants

\*CONTACT US @netmag f /netmag netmag@futurenet.com @net.creativeblog.com medium.com/net-magazine



#### BEHIND THE COVER

This was a fun creative brief. I started with thumbnail pencil sketches, which then developed into larger sketches trying out different perspectives of a city scene, keeping in mind the need to show the brands clearly and to make room for a nice big headline. I also tried a few variations on how the main headline could work.

A lot of the rough stage is spent taking these sketches into the computer and fiddling about with them. From approval of a rough version, I sketched the scene out in a finalised, neater pencil drawing and inked the linework in pen. This inkwork was then scanned into Photoshop, coloured and shaded, and texture was added there too.

Elly Walton, UK

#### CB

#### TOXIC WEB

net: In our issue #286 Big Question (netm.aq/bq-286), Mike Monteiro wrote: "I look around at our industry and see an ocean of white men." The comments rolled in ...

Over-exaggerated and ridiculous. If all you see is an 'ocean of white men', maybe you need to get out more. I have worked with a huge range of people, male and female, from many ethnicities. Stop the negativity and selfflagellation, please.

**Icanseeit** 

I couldn't continue reading after the first rip regarding 'white males'. Totally

inappropriate and untrue. Please leave liberal politics out of your next article.

**Truth Hurts** 

Mike Monteiro responds: It's rare that comments do such a good job of proving the point, vet here we are. Not only do I see an ocean of white men before me (and this statement is fair and correct: tech is overwhelmingly white and male) but I now realise that ocean is made of tears.

The tears of men who've had things handed to them for far too long. The tears of men who take and take and take, far more than their just proportion entitles them to, and then cry injustice when others attempt to take their fair share. I see an ocean



Fail fast Leo Frishberg presented a new methodology of product invention

of white men who fear that others may come along who are better and smarter, and scariest of all, different. But mostly what I see is a bunch of sad whiners who need their bottles.

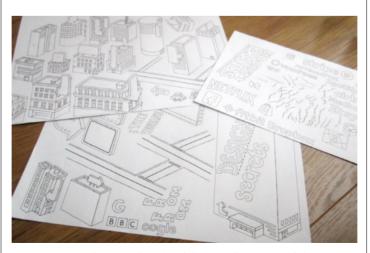


#### HOW TO FAIL

net: In issue #283, Leo Frishberg's article urged designers to "fail fast, intelligently". We posted it on Medium at netm.aq/createfirst and got this response.

Great stuff. A related application of 'fail fast, intelligently' is 'fail fast, systemically'. The similar goal is to intentionally provoke critical reactions from a system/s. While this often requires models or test environments to implement, it's especially helpful for exercising complex new logic on brittle old systems.

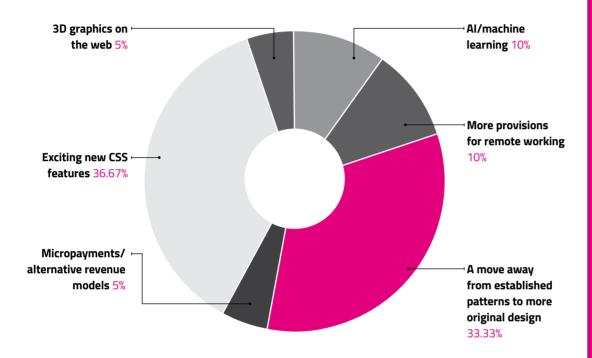
Denny Brandt, Philadelphia, US



Work in progress Illustrator Elly Walton (ellywalton-illustrations.com) shares some early sketches of this month's cover design

**★**THE POLL

## WHICH OF THESE DO YOU MOST WANT TO SEE FLOURISH IN 2017?





#### From our timeline

We asked @netmag followers: what does the term 'UX designer' mean to you?



All designers are UX designers – design without considering the

end user isn't design, it's just decoration. But 'UX' suggests you're involved in research/ feedback/planning/iterating and always being a user advocate @ajdf



Research, documentation, design, prototyping,

testing, iteration @westleyknight



Buzz words and +10k salary @myfirstraygun



Wireframes, prototypes, user flows, TESTING @ResWebDes



It doesn't mean very much at all, but mostly a misunderstanding of the individual focuses of

design team members. Or a recruitment buzzword

@madebysheppar



It gets me mad, that's what! ALL designers should

have the user's experience as a priority as a given @maxray



The one who changes 'how things work' to

'how things should work', from the user perspective @Kolett\_\_



Someone who takes requirements and ideas, moulds them

to an experience framework. then hands over to interface designers

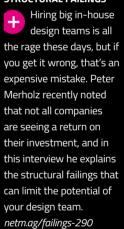
@ojrask

#### COOL STUFF WE LEARNED THIS MONTH

#### CSS WRITING MODES

Here's a cool fact: vou can make text run vertically on your page using just one line of code and a little-known CSS property. Jen Simmons follows up this tasty morsel with a lesson on CSS Writing Modes, which should help you understand CSS Grid and Flexbox properly. netm.ag/modes-290

#### STRUCTURAL FAILINGS



#### **MEANINGFUL PROBLEMS**

If you like the idea of using your talents to solve the world's major problems rather than tweaking interfaces for brands, you should read this article by Andy Budd. He urges us to take in the big picture: sometimes the right opportunity just isn't there, and not everyone is in the financial position to take risks. Don't sweat it; it's hard! netm.ag/problems-290

Send your questions to netmag@futurenet.com

Practical advice from industry experts

#### THIS MONTH FEATURING...

#### VARYA STEPANOVA



Varya specialises in open source UI components and libraries w: varya.me t: @varya\_en

#### ADA ROSE EDWARDS

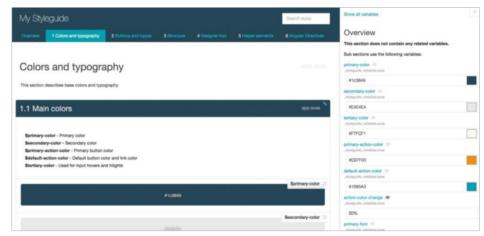


Ada is a senior engineer and web developer advocate at Samsung w: ada is t: @lady\_ada\_king

#### \*QUESTION OF THE MONTH

#### Are there any tools or sites that will help me get a pattern library set up quickly?

Nicola Walton, Leeds, UK



Style counsel The SC5 style guide generator automatically creates a documentation website

VS: I usually start with SC5 Style Guide (netm.aq/sc5-290), to which I contribute. It's a KSS-based generator; it parses CSS (Sass or Less) code and makes a documentation website automatically. For me, it also works as a development playground. This way I ensure that the resultant style guide is a part of development process. I have also been building more JavaScript-focused solutions. For this, I use React Styleguidist (netm.aq/rsq-290), which provides similar features for ReactJS code.

#### PROGRESSIVE WEB APPS

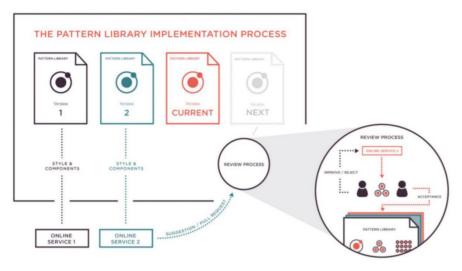
#### FINDING A ROLE

Will progressive web apps be an alternative, replacement or an add-on to native mobile apps? Can they surpass mobile apps' usage and development?

Nino Ross Rodriguez, Singapore, SG

**AE:** PWAs are replacing native mobile apps, and have been doing so for some time. The Financial Times is a good example: it replaced its mobile app with a PWA (app.ft.com) in 2012. It enables

the publication to serve Android, iOS, Blackberry, Firefox OS, Windows Phone and desktop computers via a single responsively designed app - and to reach all of these platforms with a single distribution maintained by a small team working on the same codebase. The web platform has only got more homogenous since then, because of focus on interoperability by browser vendors, which makes it easier than ever to target the web as a platform for apps.



Setting a pattern It's important that your team are in harmony regarding your web interface's components

#### PATTERN LIBRARIES

#### INITIAL STEPS

What are the first steps for building a pattern library?

#### Fran Heyes, Derby, US

VS: The first step in building a pattern library is to choose and start using an automatic style guide generator. You want to start with building just one component, say a button. Its documentation should be taken from the code, so any code changes will cause the style guide website to automatically update. This will inspire you and your team to move forward.

As for the library's content, start with team brainstorming - you should all be on the same page about your web interface's components. Print out a page customers use a lot, and try to outline the pieces of interface, giving them names.

#### VIRTUAL REALITY

#### WEB ADVANTAGES

Is the web the best place for VR/AR? It works mainly on TCPIP, which isn't for real time. Lewis Cowles, Essex, UK

AE: I'll start this answer with a quote from Google's Josh Carpenter: "If visual fidelity was all that mattered, we'd be watching Blu-rays not Netflix." Right now, the only way to do VR on the web is via WebGL. Using it, you won't get the same performance you'd get from native.

But that is not why we ship to the web; the web offers advantages that far outweigh that. Taking one example:

URLs, instant sharing of content that works cross-platform. The patterns that make progressive web apps valuable apply doubly to virtual reality.

WebGL 2.0 and WebAssembly are coming to the web very soon, which should help with performance, but the web platform gives us more than that. There are already VR web browsers, and hopefully soon we will see APIs for enhancing traditional web content when viewed in a VR browser.

#### PATTERN LIBRARIES

#### **KEEPING UP-TO-DATE**

Working with clients, how do you ensure your pattern library is used and updated? Osman Ahmed, Preston, UK

VS: The only way is to make it a part of the development process that cannot be excluded. Pattern library documentation should be code generated, so it reflects every future codebase change. Using a style guide website as a development playground should be natural and convenient. It encourages developers to add their fixes into the guide and focus on separate interface components and maintaining them independently.

People usually find it easy to follow patterns that help in their everyday work. The key to success is to solve some existing coding problems by introducing component and style guide-driven development. Once the team's respect is gained, these practices will be their friends for a long time.  $\square$ 

#### 🛂 3 SIMPLE STEPS

What are the tools and resources for beginners and what should we keep in mind when building for virtual reality experiences?

**AE:** My advice for beginners looking to start exploring virtual reality is as follows:



#### TRY A-FRAME

In my opinion the best place to start is with A-Frame (aframe.io), A-Frame lets you start building VR experiences using pure HTML to describe 3D shapes. An example in JSBin that you can edit right now is at netm.ag/vr-290.



#### **EXPLORE PLAY CANVAS**

Another good place to start is Play Canvas (playcanvas.com). The cloudbased game development platform has recently updated its editor to enable WebVR development.



#### **TARGET MOBILE**

Most VR users will be using Google Cardboard or GearVR. Dynamically load your content as it is needed, and start rendering within three seconds. Users don't wait. The scene should work without VR to give a taster and encourage them to find and wear their VR headset.



14 talks, 4 workshops, 2 amazing days: learn about practical frontend solutions, design systems, the future of the web & more!



SARA SOUEIDAN
FREELANGE FRONTEND
WEB DEVELOPER
www.sarasoueidan.com



JENNIFER BROOK LEAD DESIGN RESEARCHER, DROPBOX www.jenniferbrook.co



PETER SMART
HEAD OF UX AND PRODUCT
STRATEGY, FANTASY
www.petesmart.co.uk



CATT SMALL
PRODUCT DESIGNER,
ETSY
www.cattsmall.com

TICKETS ON SALE NOW

www.generateconf.com

People, projects & paraphernalia

### THIS MONTH FEATURING...



#### **SIDE PROJECT OF THE MONTH** 14

Nash Vail's app lets you know how long you've spent procrastinating online



**CLIENTS FROM HELL** 

One unlucky designer is mistaken for an out-of-hours printing company



**WORKSPACE** 

Jacinte Faria takes us around Stink Studios' beautiful Los Angeles home



**BEYOND PIXELS** 

To give her brain a break, Sara Soueidan turns to the meditation of analogue art



**NEED LIST** 

The stuff we want this month, including Lego's new robot-building kit



**EVENT REPORT** 

19

Scott McCaughey heads to Europe's biggest CSS conference, DotCSS









#### **CHRONUS**

Nash Vail's app provides a constant reminder of how long you spend procrastinating online

#### \* SIDE PROJECT OF THE MONTH



iob: Software builder w: www.nashvail.me t: @NashVail

net: What is Chronus (netm.aq/chronus-290)? NV: Chronus is a Google Chrome new-tab extension that helps you control the time you waste online. It keeps a list of websites you think you should be spending less time on, and whenever you're on one of them, a timer in the background updates every second. Chronus replaces Chrome's default new-tab page with a bar graph, with each bar representing the aggregated time you have 'wasted' on a particular day. The goal is to keep the current day's bar shorter than the previous, decreasing the time you waste online. Chronus also shows quotes such as 'Wasting time is the subtlest form of suicide' to keep you motivated. 'Chronos' was the Greek god of time.

#### net: What inspired you to build it?

NV: As a college student, managing classes, social engagements and assignments left little time for learning and pursuing a passion. Of the little time that was left, I found myself spending the majority of it on Facebook, Twitter and Reddit. I've always had the idea of building some sort of time wastage manager. Back then I was subscribed to a newsletter that sent out five ideas every week, one of which was to build a Chrome new-tab extension that would show the time spent on Facebook and Twitter for a day. It appealed to me and I started working on it.

#### net: How does it work?

NV: I built Chronus using Chrome API and core web technologies (HTML/CSS/JavaScript). A background page that is capable of detecting the domain of the

website the user is on runs continuously. If the site's domain matches the one Chronus has in its memory it updates a timer in the background. Data like the list of websites to be tracked and time wasted is saved in localStorage, and the bar graph is drawn using the Chart.js library.

#### net: What were the design considerations?

NV: I wanted the design to be minimal. I kept the background plain white: no decorations or bold colours. I have used several new-tab extensions, and they end up adding a huge amount of visual weight, which kills the very simplistic approach Chrome follows. After going through a couple of iterations I settled with the one that seemed simple and direct.

#### net: What features did you change as you were building the tool?

NV: I was using the extension as I was building it, and when I discovered Facebook and Twitter weren't the only sites chewing up my time, the first feature I added was an ability to store different sites to be tracked. I also found myself removing sites from the list to stop them being tracked, which defeats the whole purpose of the app. I therefore added a feature that enables users to permanently lock the site list and disallow any editing.

Finally, the most important feature I added was the bar graph, which provided a contrast between time spent over subsequent days and was the thing that finally helped me control my time wastage. The motivational quotes were a cherry on top.

#### net: What did you learn during this project?

NV: Apart from Chrome API and JavaScript, I learned that testing your product in a real world scenario as you're building it is important - it helps in identifying features that can be added and removed. I wrote about my design process on my blog (netm.ag/vail-290).



## POSTCARDS FROM THE EDGE

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

#### \* CLIENTS FROM HELL

I am a freelance graphic designer. Last night at 8.30pm, I received an email from a local client I'd designed a postcard for.

Client: Hi, we need 5,000 postcards printed so we can mail them tomorrow.

Me: I'm sorry, I think you have me confused. I'm the graphic designer your organisation works with; I do not handle printing myself. I can recommend a few printers, but I don't think anyone is going to be able to have that order finished for you by tomorrow since we are long past normal business hours right now.

They apologised and hung up. Then I got another phone call, at 9.10pm:

Client: Hi again. We are in a marketing meeting and we want to know what it's going to take for you to get these printed by tomorrow.

Me: I'm sorry, I must not have made myself clear. I am not a printer; I'm the designer who created the design for that postcard. I don't run or have access to any commercial printers. I really can't produce that order for you.

Client: Well, how about you call your printers then and get us some quotes while we're here? Me: That's not going to work, I'm afraid. I could maybe call a few printers tomorrow to see if anyone would even take on this project, which, to be frank, is unlikely. Also, I would have to charge you for my time doing so, as it was not part of our original contract.

Client: Why can't you get us quotes now? We're in a meeting. We need to make a decision. Me: ... it's after 9pm, nobody is open right now. Client [sighing loudly]: Fine. I guess you can have them printed tomorrow if that's how it has to be. Me: Again, it wasn't in my contract that I needed to have these printed for you. I'm not sure why you would pay me to do it when you could take care of it internally.

Client: Oh, and we need these in a week. Me: I thought you needed them tomorrow?

Clients are confusing.

#### **CLIENTS**HELL clientsfromhell.net



## STAY UP TO DATE WITH TECHNOLOGY

With so many frameworks, tools and techniques out there, no one can know it all. We asked the @netmag followers how they decide on technologies to keep up with, and which new ones to learn

#### WHATEVER FITS

Don't get bamboozled by buzzwords. "Talking about the latest 'thing' in articles and at conferences is great, but doesn't always translate to client work," says @Ally\_\_Baird. @maxray agrees; he chooses "anything that will make my job more consistent". In a similar vein, he says: "You have to temper the use of new tech with what is appropriate on live client work." @frontendben reckons the technologies to keep up with are the ones that will pay the bills.

#### **LOOK AT THE HARDWARE**

"Hardware progression is a great compass to go by," says @tomWilderspin. "More CPU cores, faster/cheaper memory and storage will always guide the web layers," he adds.

#### **MAINTENANCE**

We all know the frustration of making a project that's dependent on something poorly maintained. So it's worth checking on this in advance. @daveymackintosh recommends you look at "how quickly/kindly tickets are solved or closed" as well as "growth rate, stack overflow question count, long term effect on the industry".



#### **MAKING A STINK**

Jacinte Faria takes us around Stink Studios' LA home, complete with oversized plants and a bridge to nowhere

\* WORKSPACE

Stink Studios is a creative studio with offices all over the world. You may know us as Stinkdigital and Stinkstudios; we merged at the end of last year!

In 2015 we set up in Hayden Tract, Culver City, LA. It's in a former industrial zone turned design district known for Eric Owen Moss' experimental architecture. As well as being an architectural Mecca, our area is home to the likes of Nike, Apple/Beats by Dre, Alejandro Iñárritu, and a couple of innovative coffee shops.

The creative community that's forming in this Culver City pocket is incredible. Many a new client relationship has been forged through coffee run-ins and unscheduled drop-ins. We live in Moss' Cactus Tower. We moved

in and retrofitted the space over several months to bring it to classic-contemporary perfection.

Our studio is large, concrete and open, with vaulted wood-beamed ceilings. We make the most of the cavernous space with our fiddle leaf fig tree [1]. Isn't it the biggest fig tree that you ever did see? If it weren't for the garage doors and the high ceilings, it would have never been a part of our lives. Plus, the concrete floors mean Steve can easily wheel his bike [2] into the studio. Contrary to popular belief, not everyone drives a car to and from work in LA.

The previous tenant's massive white cyc was one of the biggest features that required re-jigging, and we cut three quarters of it down to create the film division's

production bay. When we did so, it became evident that what was once a pretty useful second floor bridge allowing people to watch in-progress shoots, was going to be our 'bridge to nowhere' [3].

Last year I visited Copenhagen and brought back a bunch of Anders Arhoj's ghost statues [4] for everyone in the office. At the time there were only six of us – I need to add to the collection.

Our expanding team is also an issue when it comes to picking up the office treats. This digital doughnut wheel [5] is 'spun' every Thursday night to see who's buying Friday's doughnut. McKenna 'won' this week and is super-stoked about it. We have our doughnuts with coffee made in the espresso machine [6] that our New York family bought us as an officewarming present. It's a constant reminder that we're loved and have the means to go on.

Jacinte (looking at camera) is executive producer for Stink Studios in Los Angeles. The company also has bases in New York, London, Paris and Berlin



Intel® Xeon® processors.



## **NEW**

1&1 eliminates the "noisy neighbour effect": Ideal for beginners as a web and mail server, but also for more demanding projects like database applications, the new 1&1 Virtual Server Cloud is 100% yours to use! Take advantage now of the latest cloud technology.

- No shared resources through VMware virtualisation
- Full root access
- SSD storage
- Unlimited traffic
- High performance

- Maximum security
- Best price-performance ratio
- 24/7 expert support
- Choice between Linux/Windows
- Plesk ONYX







**(** 0333 336 5509



1and1.co.uk





VAIDEHI JOSHI Software engineer, Imprint vaidehi.com

#### **BRAIN.FM**

If I really need to get things done, I put on headphones and listen to song or a playlist on repeat. Brain.fm does that for you, using an AI engine that composes all the music. I choose my mood and how long I want to listen for. I always seem to get more work done when I use it. www.brain.fm

#### **ZEPLIN**

If it were up to me I'd avoid writing CSS at all costs, but as a full-stack engineer it's part of my job. Zeplin makes it less painful. Our designers upload their specs, and we get everything we need - hex colours, dimensions - all down to the pixel. zeplin.io

#### **SLEEP CYCLE**

This app analyses your sleep using your phone's mic, then uses soothing sounds to wake you up during your lightest sleep phase. As a data nerd, I love looking at its analysis over time. It turns out I sleep way better during a new moon than a full moon ... www.sleepcycle.com





## DRAWING

This month ... to give her brain a break, Sara Soueidan turns to the meditative qualities of analogue art

\* REYOND PIXELS

Drawing defined who I was for a long period. It was my goal in life for some time to become a professional animator; to join a studio in Japan and draw anime and other cartoons I used to love to watch back then.

Today, drawing is a great activity for when I need to really de-stress - one that's even more powerful than exercising or cooking. When I draw, I enter a trance. I literally feel an energy flowing through me, into my pen and onto the paper in front of me. I went as far as calling my drawings 'my babies' when I was younger. They are a part of me. Drawing enables me to explore myself in ways I can't normally. I detach from the world around me and can finally empty my head from the thoughts of work and life that would normally haunt it all day and night.

Sometimes when I'm really tired and in need of a dose of art without getting my hands dirty (pun intended), all I need is to watch someone paint to get the same feeling I get when I draw. Watching artists paint with watercolours is my absolute favourite.

A pencil, ballpoint pen and charcoal are my tools. I started out drawing with pencils and kids' watercolours when I was 10. I did my first drawing when my family and I were staying at

a hotel during the war in Lebanon in 2006 - I saw a painting on the wall that I had to replicate.

I can only draw what I see. I've never taken any drawing or painting lessons so I never grew my talent into skills that I could put to more practical use. I experimented with pastel colours for a short while. I'm quite pleased with the results of those experiments and would like to make more art with pastels at some point. But, admittedly, I don't make as much time to draw today as I used to a few years ago.

My love for the web has seen me drift away from my analogue drawing tools to digital ones. Mind you, these digital tools aren't a digital pen and paper or some illustration software; they are code. Code is the new drawing tool that allows me to get just as creative as drawing used to. After all, I can only draw what I see. Doing that with painting or drawing wasn't very practical, but when I get to translate designs or ideas I have into living pages, it is much more so. n

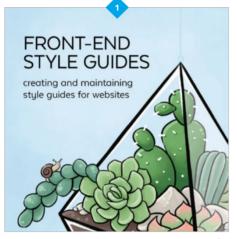


Sara is a consultant frontend web developer, author, speaker and trainer from Lebanon. She was also **net**'s Developer of the Year in 2015

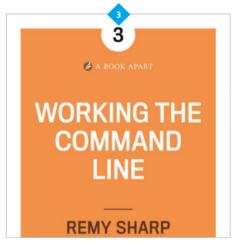


### STUFF WE WANT

Small objects of web design wonder: from Lego's drive to promote youth coding to a lesson in overcoming terminal terrors

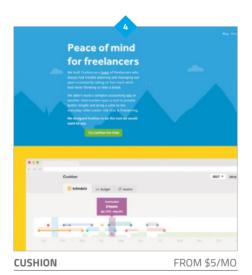






FRONT-END STYLE GUIDES

LEGO BOOST TBC **WORKING THE COMMAND LINE** 







GITHUB REPORT CARD

FREE

#### What we think

(1) The updated ebook edition of Anna Debenham's Front-end Style Guides has landed (netm.ag/fesg-290), complete with cover art by Geri Coady featuring a snail named Sheldon. (2) Lego's recently announced Boost robot-building kit is geared towards encouraging young minds to learn to code (netm.ag/boost-290). (3) Remy Sharp's Working the Command Line (netm.ag/command-290) promises to tame the fear induced by terminal windows. (4) Freelance life/work/money-tracking app Cushion (cushionapp.com) has had a tasty redesign and is launching a new package aimed at teams. (5) There's a treat for Sketch users from Christian Krammer, whose new book (netm.og/sketch-290) takes on the app's advanced functions. (6) Slow start to 2017? Sit pretty on your 2016 GitHub laurels courtesy of Portland data-vis service Reflect (githubreportcard.reflect.io).



## THE NEW RULES OF UX

From conversational UI to mobile-first, we run through the patterns at the cutting edge of user experience

### **PLUS**

Explore the exciting updates in Bootstap 4

Dive into virtual reality with A-Frame and Vue.js

Build an editable landing page with the Craft CMS

## **ISSUE 291 ON SALE 23 FEB**

PRINT EDITION, BACK ISSUES AND SPECIAL EDITIONS AVAILABLE AT myfavouritemaqazines.co.uk

DIGITAL EDITIONS AVAILABLE ON ITUNES, GOOGLE PLAY, KINDLE, NOOK AND ZINIO

net.creativebloq.com



## DOTCSS

Scott McCaughey headed to Paris for Europe's biggest CSS conference, and learned a bit about printing along the way

#### \* EVENT REPORT

DATE: 2-5 DECEMBER 2016

**LOCATION: PARIS, FRANCE** 

URL: www.dotcss.io

The 2016 dotCSS conference was held in the beautiful Théâtre des Variétés in Paris. The one-day event featured topics from a varied group of speakers including the legendary Håkon Wium Lie, the man who first proposed CSS while working at CERN, and current CTO of Opera.

The day kicked off with a session from Varya Stepanova about what she's learned building style guides and pattern libraries for many years. Next up was Wenting Zhang, who showed how quickly and easily we could push the boundaries of CSS by using a single element to draw an impressively detailed moustache on screen. Philip Walton took us in an entirely different direction by demonstrating how difficult it is to create CSS polyfills, and how the upcoming Houdini API might make polyfill developers' lives easier in the future.

Chris Lilley of W3C (pictured) presented a talk on powering up web fonts with new and upcoming technologies. For fonts that include them, CSScontrolled OpenType features can do wonderful things and have fairly robust support among modern browsers. Lilley also gave us a look at upcoming colour and variable fonts, the latter of which could have a hugely positive impact on the web.

While many frontend developers' least favourite task is building HTML emails, Kevin Mandeville showed us how that area is moving forward (albeit slowly) thanks to improved support and rendering from major email vendors. Lea Verou followed that up with a talk about CSS variables and how they can be manipulated to do much more than variables in preprocessors like Sass. Val Head gave us a quick but intensive look into the inner workings of web animation by exploring a variety of easings and how they can improve user experience.

dotCSS concluded with a rousing talk by Lie on a subject most developers likely haven't spent much time thinking about: using CSS for printing. Not just printing a web page, but using CSS to generate an entire printed book by converting code to PDF. An unexpected and compelling end to a great event. In



Scott (@scott\_mccaughey) is a frontend developer in Washington, DC with a passion for clean design, cleaner code and new technologies



#### **DEVNEXUS 2017**

**DATE:** 22-23 FEB 2017 LOCATION: OXFORD, UK

An epic 14-track conference connecting developers from all over the world and promoting open source values.

devnexus.com

#### **MOBILE+WEB DEVCON**

**DATE:** 1-3 MAR 2017

LOCATION: SAN FRANCISCO, US

This event aims to help you master iOS, Android and web. One day of labs precedes the two-day conference, with tracks on mobile, development and the IoT. They even throw in breakfast. netm.ag/devconf-290

#### **GENERATE**

**DATE: 27-28 APR 2017** LOCATION: NEW YORK, US Covering the tools and topics at the cutting edge of the web industry, Generate will help you boost your skills and become a better designer or developer.

www.generateconf.com

#### **DEVIT**

**DATE: 20-21 MAY 2017** LOCATION: THESSALONIKI, GR DEVit describes itself as a '360-degree web development conference', covering frontend, backend, devops and mobile. Speakers include Hugo Giraudel and Harry Roberts. devitconf.org

#### THE LEAD DEVELOPER UK

**DATE:** 8-9 JUNE 2017 LOCATION: LONDON, UK

A two-day conference featuring practical advice from experts on leading and motivating your team, plus high-level sessions on new and disruptive technologies. 2017.theleaddeveloper.com

## SUBSCRIBE TO NET

GET THE NO.1 CHOICE FOR WEB DESIGNERS AND DEVELOPERS DELIVERED TO YOUR DOOR, YOUR DEVICE, OR BOTH



## PRINT EDITION ONLY

Take out a print subscription to **net** and get your copy before it hits the shops. Each issue is packed with the latest web trends, technologies and techniques

FROM £12

SAVE UP TO 38%

BASED ON A QUARTERLY DIRECT DEBIT



## **DIGITAL EDITION ONLY**

Take out a digital subscription to **net** for on-the-go access to our interactive edition, with streaming screencasts, extra images and more

FROM **£11.25** 

SAVE UP TO 31%

BASED ON A QUARTERLY DIRECT DEBIT

Terms & conditions: Prices and savings quoted are compared to buying full-priced print and digital issues. You will receive 13 issues in a year. You can write to us (Future Publishing Ltd, 3 Queensbridge, The Lakes, Northampton, NN4 7BF, UK) or call us (UK: 0344 848 2852; overseas: +44 344 848 2852) to cancel your subscription within 14 days of purchase. Your subscription is for the minimum term specified and will expire at the end of the current term. Payment is non-refundable after the 14-day cancellation period unless exceptional circumstances apply. Your statutory rights are not affected. Prices correct at point of print and subject to change.

For full terms and conditions please visit: bit.ly/magterms. Offer ends 28 February 2017.



## PRINT & DIGITAL EDITION

Enjoy a combined print and digital subscription, and take advantage of print as well as exploring the digital experience on the go FROM \$\frac{215}{58}\text{SAVE UP TO 58}\text{SAVE UP TO 58}\text{



## 20% OFF ADOBE CC PHOTOGRAPHY PLAN

We have teamed up with Adobe for a limited time to offer you 20% off Adobe Creative Cloud Photography Plan (Lightroom + Photoshop) when you subscribe to net. **That's £20 off!\*** 

## myfavouritemagazines.co.uk/NETMAG

## Opinions, thoughts & advice



#### INDIA'S ONLINE REVOLUTION

**26** and

**Shwetank Dixit** considers the problems and opportunities presented by India's burgeoning online population



INTERVIEW

30

Design researcher **Jennifer Brook** reveals why she said goodbye to freelance life and shares her vision for a better work culture



**HEROES** 

35

In the second installment of his new column on the design of business, **Christopher Murphy** explores how we can learn from our heroes

\* WORKFLOW

## UPPING THE PACE

**Marcin Treder** reveals how UXPin revamped its workflow in order to release updates every four weeks, without diminishing quality

Much is made of the speed at which the web industry evolves. For many it seems overwhelming and unsustainable, but at UXPin speedy product development is an absolutely crucial part of our overall strategy. The task of optimising for speed while maintaining quality is a difficult one. On the surface these are the exact opposites. However, if you run a well-optimised product development process, speed and quality can be unified and become your competitive advantage.

Because fast development is so important at UXPin, we've assigned objective key results (OKRs) to it. First, we agreed that we want to have at least one marketable update every four weeks. Second, we want to see an improvement in the NPS and customer satisfaction (Csat) scores, while decreasing the number of bugs filed by our customers. Realising both of these goals at the same time forced us to rethink our entire product development process.

We had to go from a more spontaneous process to strict, well-run, agile development. Our vice president of product began running a separate R&D process to build and validate a roadmap of our upcoming releases - you can't run great product development without spending time with your customers and prospects.

#### SPEEDING UP

At the same time, we've started to give a lot of power to our multidisciplinary teams. Empowering employees to make their own decisions makes everything faster. Especially in a larger company, the process of getting things signed off by different people can easily grind operations to a halt. Once we agree on the direction and goals of a project, we trust teams to do things correctly and meet deadlines.

Our teams dedicate extra time to planning and analysing projects before a sprint starts, so things are delivered on time. That gives the organisation more knowledge about the true nature of the project, and means that our teams make all the hard choices concerning the scope of the work before it starts.

We've also started to pay a lot of attention to how the collaboration between designers and developers affects our work. Graphic design files are hardly helpful when you're communicating with developers. On their own, both lack the necessary context to make a great product. Constant meetings and emails are distractions that slow down product development.

To solve this issue, our designers and developers reached an agreement on what and when to deliver. While we're not producing huge documentation up front, we've found that even in an agile process, teams are more efficient if they use dynamic, agile-friendly documentation stored on top of their design assets.

#### **SMOOTHING THINGS OUT**

We also looked at our workflow to ensure we kept things running smoothly and sustainably. I'm a huge believer in the marriage of design and development in the agile process. There's nothing more efficient and powerful in the product development world than a multidisciplinary



### Empowering employees to make their own decisions makes everything faster. We agree on goals and trust teams to do things correctly and deliver on time

agile team that finds its mojo and executes mercilessly on every case.

I'd argue that three things are necessary to have a really smooth workflow. First, have a definite goal. No matter your role on our team, we have a common aim: To build the best product possible and deliver the greatest experience to our customers. Realising this goal is one of the most important steps on the way to creating a truly powerful workflow.

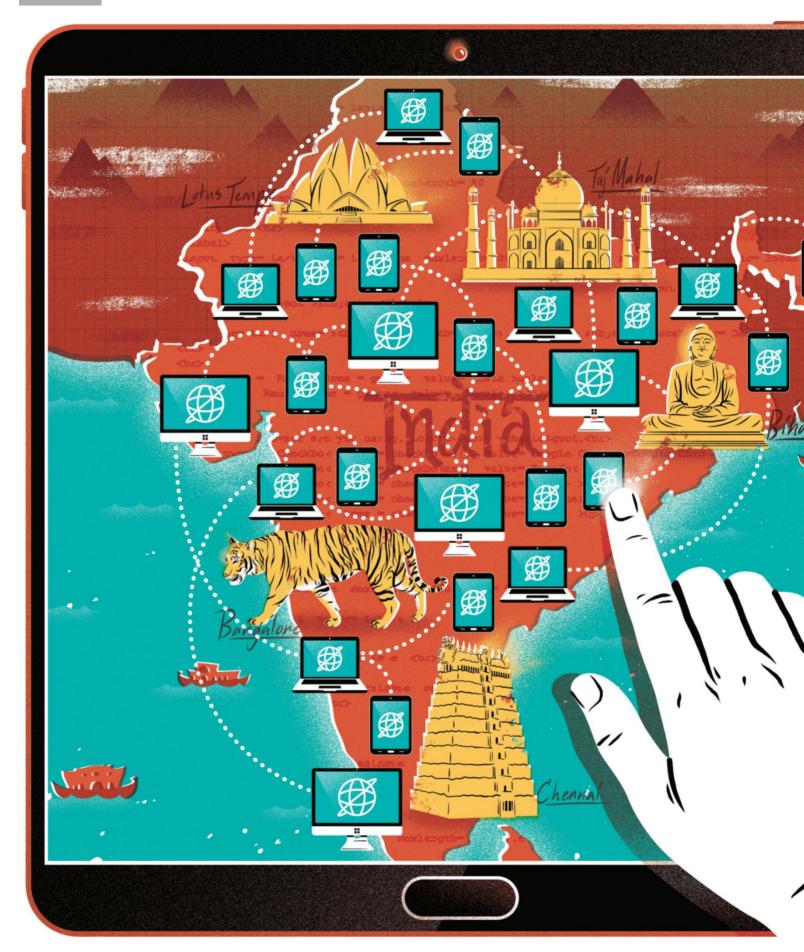
Second, it's vital that product development is inclusive. Information outside your domain and expertise can empower you to do the best job. Yet designers hardly ever share reasons for their design decisions or results of their research with developers. In my experience, turning this workflow into an inclusive environment in which people are encouraged to participate, or at least observe the whole process, increases the effectiveness of the entire team.

Finally, be empathetic. Designers should consider how their work affects developers and vice versa. As a designer, if you're delivering an undocumented, messy PSD file, you're slowing down development. So consider what you could do differently to help others do their work.

Speed can be an incredible competitive advantage for a startup, and by adapting your practices it can be sustainable. Expect new, great things from us at least once every four weeks! n

Marcin (@marcintreder) is a UX designer and entrepreneur based in Mountain View, California. He launched UXPin in 2010, and is now CEO





## INDIA'S ONLINE REVOLUTION

**Illustration by** Ben Mounsey

India's online population is skyrocketing. Shwetank Dixit looks at the problems and opportunities this presents

As well as being the world's largest democracy, India has both the world's fastest growing economy and markets for online content. According to Internet Live Stats, India has more than 462 million internet users at present, which is about 13.5 per cent of the global internet population. The overwhelming majority of them are on mobile, with leading sites like Facebook, Reddit, Quora and so on featuring India as one of their top countries in terms of usage.

People might think that 462 million is a lot, but that's only about 34 per cent of India's population. That leaves a whole lot of room for growth. According to Akamai, by 2020 India will have around 730 million internet users, with 75 per cent of growth coming from rural areas, mostly on mobile. Since the penetration of English is low in these areas, the opportunities for content and online services in regional languages is immense.

This is interesting because while India has 22 official languages and hundreds of dialects, the growth of the web in India has so far mostly relied on English content. However, the next wave of new users will probably come from places where people are more comfortable in their own regional dialects. It will be fascinating to see how companies in India finally embrace localisation in terms of their user interface - something they haven't done so much thus far.

India and other developing countries (like Indonesia and many African countries) adopted proxy browsers at a much more rapid pace than other countries. This is largely due to most of these countries' slow data plans.

Proxy browsers sped things up by offering compression of data. Since data was compressed, they also paid less for browsing the same web page compared to a standard browser. This mattered a lot when you were supposed to pay per KB or MB as these browsers sometimes compress traffic by up to 90 per cent.

#### PROXY BROWSERS

In the last few years, the device landscape in India has been rapidly changing. Smartphones are far outselling feature phones and people can buy cheap Android phones for less than \$100. This has also had an effect on proxy browser usage, with many people no longer finding the need for it, and instead opting to use a full-featured browser. However, it would be a mistake to think that proxy browsers no longer matter here - they still do, and are thriving. In November 2014, Opera announced it had 50 million active monthly users in India using Opera Mini.

Proxy browsers often do have restrictions. Essentially what is happening is that whenever you request a web page, that request is sent to a proxy server, which actually does all the work of fetching the page, rendering it and sending a compressed snapshot to the end user. Because of this architecture, there are restrictions on how dynamic the web page viewing experience can be. In Opera Mini's case, if it is using 'Extreme data savings' mode (which is the mode using the proxy server), then it's good to know that everything requires a server round-trip. So click events, for example, will



need to send that request to the proxy server where it will generate an updated snapshot, which will then get sent back to the user's phone.

For Opera Mini, JavaScript can execute on a server for about 4.5 seconds. If your JavaScript takes more time than that, the page will time out. This often means that many single-page applications may not work correctly, and whenever possible, server-side rendering of content should be looked into.

#### **NETWORK ISSUES**

India suffers from very slow internet speeds. Akamai reported that internet speeds were the lowest amongst all countries it tested in the Asia-Pacific region. Although there are pockets in big cities where 4G services are available, most of India still isn't ready for it yet. Recent entrants like Reliance Jio promise cheap LTE plans, but only time will tell whether those will work and gain adoption, or be plagued with QoS issues. Historically, in countries like India, Indonesia and Africa. This is no coincidence. These countries have huge numbers of people who access the internet primarily on their smartphone, which is often Android (iOS right now doesn't support most of the technologies needed for PWAs), and have terrible mobile data ecosystems, meaning there is a greater need for things to work offline.

In the future, expect more adoption of PWAs in India and similar countries. Another great thing about PWAs is that all their underlying technologies (like Service Workers, Web Manifest and so on) need to be on HTTPS, thereby forcing sites to be more secure by default.

#### **GAINING ACCESS**

There is another equally important thing in the Indian context, which is web accessibility. India has the largest blind population in the world. The number of people with other disabilities like deafness, motor-control disabilities and so on is also huge. Unfortunately, even

India has the largest blind population in the world, and the number of people with other disabilities is also huge. Unfortunately, even though the need for web accessibility is high, the vast majority of Indian websites pay no heed to it

most mobile network operators in India have focused on customer acquisition and paid little regard to quality of service. Unless this changes, internet speeds in India will remain slow or, at best, highly volatile.

#### IT'S NOT JUST SPEED

Unreliable and slow networks are just one part of the problem. Network operators are not known to play fair. Back when mobile VAS was a thing, they used to charge VAS products about 60-80 per cent of their revenue, which ultimately killed the ecosystem. Recently, many ISPs and network operators in India lobbied against net neutrality regulation to be passed. They weren't successful, but only due to a sustained and never before seen public awareness and action campaign by a group of internet rights activists.

Even then, some ISPs have been known to inject ads on their own in the user's everyday browsing (unless they are browsing an HTTPS site). This is just one more reason why we need to adopt HTTPS across the web.

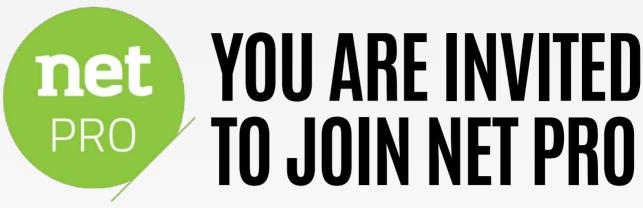
A new class of cutting-edge web apps are gaining traction, called Progressive Web Apps. These are offlinecapable and can often provide the same experience as native apps, like push notifications, and an icon on the phone's homescreen. A lot of the initial push and adoption for these kind of apps has actually taken place though the need for web accessibility is high, the vast majority of Indian websites still pay no heed to it. However, things are changing. Guidelines for Indian government websites now require sites to be in line with WCAG guidelines and overall, awareness among the local developer community towards accessibility best practices seems to be increasing, even if at a slow pace.

#### GOING FORWARD

The next hundreds of millions of people who will come online will have needs that may be slightly different to the ones right now. Sites will need to evolve to accommodate their designs for various local languages, keep in mind the millions of people with disabilities, work well with proxy browsers, work offline with service workers, and come up to par with native apps by turning their sites into progressive web apps. It's an exciting time for the web in India, and it will be fascinating to see how it changes the lives of the next wave of people who come online for the very first time.



Shwetank (@shwetank) specialises in accessibility, browsers, extensions and web tech. Formerly at Opera, he is now about to ioin the team at BarrierBreak



For more than 20 years, net magazine has been at the forefront of web design and development. Join **net Pro** and as a **special introductory offer**, **you can save £30!** 

## WHAT YOU'LL GET

- 13 issues of **net** in print and digital
- Annual Industry Report worth £100
- 4 months free when you sign up for a Treehouse subscription
- Discounts to industry events including Generate
- Design annual worth £40
- Special discounts from selected industry partners

ALL FROM JUST £135 £105



JOIN TODAY VISIT www.myfavouritemagazines.co.uk/netpro





It's hard to know where to start when talking to Jennifer Brook. There's the time she went to California to work on the first *New York Times* iPad prototype, and ended up presenting it on stage with Steve Jobs at Apple's 2010 iPad keynote announcement. Or the time she reportedly lived in a tree house for several years; or when she motorbiked around Southeast Asia during a gap in client work.

When we catch up with her towards the end of 2016, she's just undertaken a huge move and joined file hosting service Dropbox's research team full-time as lead design researcher - relocating from New York to San Francisco, and putting her successful independent consultant business on hold. The new job signifies the end of what Brook calls a "multi-year transition" from interaction designer to design researcher, and was driven by her passion for research. It's an interesting move for someone who spent their initial career working in letterpress and book-making, and more recently collaborating with forward-thinking organisations on a freelance basis. How did Dropbox manage to lure her in-house?

"Last spring, I was working with the Dropbox design team in NYC on some research for new product features," she explains. "During field visits, I fell in love with the people who use Dropbox. It was eye-opening to see the diverse problems people are using Dropbox to solve. We talked to theatrical set designers who use it to coordinate complex workflows and collaborate with the dozens of people involved in making major Broadway productions. I interviewed someone working for the UN on peace building and crisis management, who uses Dropbox to collaborate with field offices around the globe.

"People were working to solve meaningful problems, across time zones and borders, and I felt inspired by their stories," she continues. "The challenge of going in-house is finding problems you're excited to work on for long periods of time. The kinds I discovered last spring felt rich, complex and worthy of my focused time and attention."

#### **EXCITING TIMES**

Certainly Dropbox looks to have an exciting year ahead. Growing sales of Dropbox

Business – a pimped-up, paid version of the app, aimed at organisations – have helped sales jump from \$400 million in 2014 to more than \$750 million a year, according to MITTechnology Review. Meanwhile, CEO and co-founder Drew Houston is reportedly looking to take on the productivity and collaboration software market this year, offering corporate customers even more to buy from Dropbox. More details will be announced soon, but the company's rivals and industry commentators are already watching with intrigue.

Last year, Dropbox cut back its famously lavish employee perks (including a Michelinstarred chef, gym washing service and open bar on Fridays), but this doesn't seem to have dampened Brook's enthusiasm. Her role at the company – which she describes as an authentic, audacious and inclusive place to work – is to shape strategic research. It is, she says, a "delightfully hybrid" job – on one hand supporting and mentoring a small team of talented, autonomous researchers embedded within product teams; and on the other, planning and designing her own research studies.









"The challenge of

going in-house is

finding problems

you're excited to

work on for long

periods of time"

"I'm doing fieldwork that investigates the culture and values of highly collaborative teams," Brook explains. "My biggest challenge will be prioritising what we research next. There's a balance to cultivate between taking on projects that will have an immediate impact, and advocating research that can have a longer-term impact."

Brook's love of research was born within her own design practice, where she spent a

number of years working almost exclusively on research projects. Strong patterns soon emerged, proving that when a team began a project with open-ended, qualitative inquiry ("Interviewing, observing and working to understand as much as possible

about the people you most want to serve") the resulting ideas and products were above and beyond what could be achieved from only looking inward, or at competitors.

Understanding people through inquirybased research, Brook says, is critical to making work that strives to be original, relatable and on-point. "When, as designers, we can embody the problem through direct contact with people, we become agile in our approach; less attached to our solutions. When something changes - a business strategy; a goal - we can respond in kind because we have in our head and our heart a well of insight we can draw upon."

#### TABLET EXPERIENCE

Brook knows this first-hand. Before launching her consultation practice, she worked

> on UX for the New York Times' first-generation mobile, iPhone and iPad apps. While there, her team was invited to Cupertino to build the NYT's iPad app a number of weeks before Apple announced the device.

> "We arrived with a prototype," she recalls.

"This was our first attempt at thinking about what a tablet experience might look and feel like for the New York Times. We were overly focused on form, and we hadn't taken into consideration - until we had the actual device in our hands - the most likely context of use."

But a summer earlier Brook had worked with the research team on inquiry-based investigation, focusing on people who use mobile devices to read the New York Times. "The research was broad, and we asked a lot of open-ended questions," she explains. "I had first-hand experience of hearing readers' stories and internalising both what they loved about and longed for with digital reading experiences."

The team's challenge with designing for the iPad was they didn't know how people might use it: the platform being designed for didn't yet exist. However, because they had done their homework, they were able to abandon the prototype and quickly invent something new, by developing hypotheses based around customers' stories."

Working inside Apple was an unparalleled experience. As Brook later realised, her team's work during that month wasn't to create a compelling app; it was to craft a story to share with the world about why people should care. "The lesson that has stayed with me," she says, "is what being able to tell compelling stories about our work is as important as doing the work."





That wasn't the only lesson Brook learned during her time at Apple. The team were told from the outset that Jobs expected the same sort of honesty on the iPad as he would be providing on their prototype. She's commented before that his critique after their first demo was brutal. But it was more than that: Jobs' management style became a key driving force in her decision to step into a leadership role in the tech industry.

"His critique was bruising, yes," she agrees, "and it was meant to be. His feedback was candid and valuable, but also harsh. The mythology and glorification of the management styles of people like Steve Jobs, as well as the unexamined emulation of these styles by people in positions of power, is harmful."

She continues: "I believe we're undergoing a major, necessary culture shift toward the cultivation of feminine values in business. I want to live in a world where we don't have to bruise each other in order to make great work. I believe in making work that is inclusive, kind, useful and meaningful. This demands that we cultivate ourselves in these ways."

Brook's stake as a leader now is to mentor, support and encourage young designers' and researchers' practice. "There's a place for feedback and critique," she reflects, "but also a need for warmth and care in how we communicate and relate to each other."

## ASKING QUESTIONS

Despite moving into a research role, Brook still considers herself a designer. Instead of shaping information architecture, interfaces, flows and prototypes, her craft lies in how she asks questions, where they lead,

and how these discoveries are framed and shared with teams and organisations.

"The transition from designer to researcher was a long one: I thrive as a researcher, but wasn't certain about giving up the design part. I still use my design skills every day, but in a slightly different capacity," she explains. "I believe this is one thing that makes me a good researcher: I understand the kinds of information and insights designers need to feel inspired and confident in their practice. But as a researcher, the work I do can have impact across many aspects of an organisation. As many designers know, designs often fail

because of business or strategic decisions."

If there's one overarching lesson she's learned along the way, it's to stay in tune with your interests. "Pay attention to aspects of your work that energise you; figure out how to do more of those things

and less of everything else," she advises. "Don't be attached to the form your practice takes. Learning what we love to do; working to cultivate this love is a lifelong project worthy of our time and focus."

N<sub>C</sub>

"I want to live in

a world where

we don't have to

bruise each other

in order to make

great work"

**Next month:** We chat to Republic of Quality's Steve Fisher



## \*THE DESIGN OF BUSINESS **HEROES**

Christopher Murphy explores how we can learn from our heroes, to build a clear business vision



Job: Writer, designer and educator

t: @fehler

w: www.tinybooks.org

In the second article in my ongoing series exploring the design of business, I'm focusing on why it's important to establish a clear vision of success so you can begin to turn it into a reality. I believe you can 'design your future' by working through a process that helps you identify what matters to you, envisioning future success, then mapping a route towards those goals.

The more clearly you can establish a vision of success, the more easily you can reach it. As business guru Peter Drucker put it: "The best way to predict your future is to create it."

With an idea for a business loosely defined, the next step of the process is to paint a detailed picture of what that business stands for, what drives it, and how it operates. Looking at, and learning from, your heroes can help you paint this picture. It's important to note that this isn't an exercise in plagiarism; it's an exercise in inspiration. In his excellent book Steal Like an Artist (netm.aq/steal-290) Austin Kleon notes: "You don't want to look like your heroes, you want to see like your heroes."

The more you look at others around you, the more you learn to see through their eyes, and the more you learn to think through their minds. The sum total of your inspirations shapes you. As Kleon

puts it: "You are a mashup of what you choose to let into your life."

#### PRODUCT DNA

In my teaching I use an exercise called 'product DNA' to help fledgling businesses define a clear vision of success by drawing from their heroes to identify points of inspiration. Product DNA helps you to distil your multiple points of reference by focusing on three heroes - companies or individuals; products or services - that inspire you. Ask yourself: What about them is different? Why do they stand out? What about them appeals to you?

We all have heroes and we can all learn from them. However, we rarely look at our heroes in a detailed and analytical way. Spend some time tearing apart your heroes' different approaches and you'll find yourself with a great deal of raw material from which you can learn. Your three heroes will provide you with enough inspiration - aspects that you admire about each hero's way of working - to paint a picture of a new business. This will draw on your heroes and is inspired by them, but - crucially - is its own idea.

The diagram pictured below captures the product DNA I used when establishing my record label, Fällt Publishing (www.fallt.com), in the late 90s. I distilled my inspiration down from three heroes; other independent record labels that I admired and had learned from. With these in mind I established three ideas that appealed to me: releasing CDs in limited editions; publishing non-audio releases; and embracing MP3s (which were new at the time). Tying together these strands, I established a clear vision for my label. It was inspired by my heroes, but ultimately different.

Ask yourself: Who are your heroes and what can you learn from them? Steal like an artist and you'll find yourself with a much clearer vision of future success.



**Distilled inspirations** The 'product DNA' of record label Fällt Publishing





Comment **Publication** 

Edited Subscribe Talent Author Story



Don't just tell your story, **Blog your story!** 

Visit blacknight.com/netmag to get started 🌏 BLACKNIGHT





#ZeroCarbonServers



PROMO CODE: NET2

**\** 0800 808 5450 netcetera.co.uk/servers

## Save on broadband, TV, phone!







Let us do the hard work for you! All it takes is one quick call.

#### 83%\*\* of our customers save!

- Call free and speak to a UK based impartial expert.
- We review over 6,000 deals from the top UK providers to find the right one for you.
- Our experts do the hard work, answer your questions and even arrange your installation!

#### THIS MONTH'S TOP DEALS



Call us for best value up to 20Mb broadband +TV + calls package





Call us for a great value, superfast fibre-optic broadband deal



Call us free and we'll do the hard work!

Mon-Fri 8am-8pm, Sat 9am-5.30pm, Sun 10am-5.30pm

www.techradarstores.co.uk/digitalsave





\*20% of Simplifydigital customers received an average saving of £577. Data based on 484 records between 1st January 2010 and 17th May 2010. \*\* Out of 445 consultations between 01/01/2010 and 03/05/2010, 368 Simplifydigital customers saved money by signing up to our recommended deal.



# SHAWN BLANC

The businessman and productivity coach explains why quantity leads to quality

INFO Job: Founder. The Focus Course w: thefocuscourse.com t: @shawnblanc

net: What does productivity coaching entail?

SB: Most of the coaching I do is through The Focus Course. It's an online video course I launched in 2015 that helps folks with time ownership, productivity and goal setting. Last year, I also ran The Creative Focus Summit - a free, five-day event that happened entirely online. I had a dozen conversations with people to talk about creativity and focus.

#### net: Did you work as a creative before that?

SB: Yes – I taught myself print and web design before ultimately becoming the creative and marketing director for an in-house design team. After several years in that role, I stepped out on my own and began writing for my website full-time. I was able to do that thanks to the support of 500 readers who all responded to a membership drive and signed up for a monthly subscription.

net: How did you end up focusing on productivity?

SB: At first, the vast majority of my writing was centred around design and technology. But over time, I also began writing more about focus and time management because, as a self-employed creative person, I knew just how important these topics were to my own output. The more I pursued my creative

work, the more I realised that I needed the skill of focus just as much as the skills of designing and writing. Quantity leads to quality. If, as creative folks, we don't have the focus to produce a large volume of work, we'll never reach that point where our taste and our skills finally meet.

#### net: What are the biggest threats to productivity at the moment?

SB: Our smartphones and our overflowing inboxes, to be sure. We've got this urge to 'just check' email and social media. We check them when we hit a creative roadblock; we check them when standing in line at the store. These frequent micro-distractions train us to think we should never be bored. And as a result, we lack the mental stamina to focus for extended periods of time. Which is unfortunate, because it's in that focused state that we do our best work.

#### net: What are best techniques or approaches to help people be more productive?

SB: This is so dorky, but I set out my clothes the night before. This is a simple way my 'current self' can help my 'future self'. Secondly, it's important to give yourself time each day to let your mind be at rest. A friend of mine recommends leaving your phone at home while taking a 30-minute walk each morning.

#### net: There are plenty of tools and apps that claim to boost focus. Are any of them helpful?

SB: Apps and tools help, but they work best when you have a plan for your focused work time. This way you know what the aim of your undistracted time will be. The tool I am probably most fond of is my Baron Fig notebook: a dot grid Confidant variety. Even though (or perhaps because?) I use a computer all day, there's something great about pen and paper. I like to write down my most important tasks for the day, and schedule out when I'm going to work on them. I do this each morning with my coffee, notebook and a fine-tipped pen.

#### net: Everyone has days where they struggle to focus. Is there always a way to overcome this?

SB: We all have off days where we feel like we're just spinning our wheels, but they should be few and far between. A focused day starts the day before by getting the rest you need and knowing ahead of time how you want to spend your time and energy.

If you start off by checking email and responding to the urgent requests, you'll probably spend your whole day in that reactive state. However, if you can start your day by focusing on the things that are most important, you can usually stay in that proactive state.



\* CULTURE

# WHO INSPIRED YOUR WEB DESIGN CAREER?

We asked seven designers and developers who their heroes are, and how these individuals have shaped their career choices



ANNA DEBENHAM Frontend developer, Snyk www.maban.co.uk

A lot of different people have inspired me at various stages of my career. Over the past few months, I've been looking up to Lara Hogan's work in particular. She manages lots of people as part of her work as an engineering director at Etsy, and has published an incredible book, Demystifying Public Speaking, based on her years of speaking experience. Plus she can lift some really heavy stuff, and I love how she celebrates achievements with doughnuts.



INAYAILI DE LEÓN PERSSON Lead web designer, Canonical www.yaili.com

There are a few design studios that I've been following from the early days of my career whose work I admire and who are excellent at sharing knowledge, be it through writing or speaking. Clearleft and Happy Cog are the names that come to mind straight away when referring to web design. When talking about more traditional studios that inspire me in a visual way, I'd have to say Wolff Olins and Huge.



SHANE MIELKE **Creative director** www.shanemielke.com

Creatively, my inspiration is Eric Jordan. He showed me how important it is to stand out with an individual style and encouraged me to make my own. My work ethic is inspired by my parents, Fred and Jane Mielke. I grew up seeing how hard they worked on our family ranch, and in their careers, to provide for me and my sister. My mental toughness is inspired by my high school football coach, Jim Hartigan. He taught me how to shut my mouth, put team goals above individual ones, and work harder than I ever thought I could. My ability to put up with unrealistic deadlines, egotistical bosses and crazy clients all came from tough love and the lessons he taught me.



SALLY JENKINSON Senior digital solutions architect and consultant www.recordssoundthesame.com

I frequented music message boards in my teens, and I found inspiration from peers who made things just because it interested them. People used whatever tools and methods worked, sharing and learning from each other. From BBCode to HTML, CSS, JavaScript and beyond, my experience writing about music, uploading photos and customising MySpace led me down a web development rabbit hole. Central to this was my friend Matt, who gave me a copy of Designing With Web Standards. The people I surround myself with still inspire me the most to this day.



KATHERINE CORY Web designer and frontend developer www.katherinecory.com

I've followed Jessica Hische's career since before she started the Daily Drop Cap and I've always appreciated having a talented female designer to be inspired by. I saw her speak at New Adventures about 'procrastiworking' – the idea that the work you do while you procrastinate is the work you should be doing. I didn't really understand it until last year, when I made time for personal work. I'm excited to explore this more, have it feed back into my commercial work and see where it all leads me in 2017.



BRUCE LAWSON Web developer www.brucelawson.co.uk

Julie Howell, who runs a multiple sclerosis support group (www.mswebpals.org) that helped me when I was diagnosed, and opened my eyes to the fact that anyone could use the web, regardless of disability, geography or hardware. Then Jeffrey Zeldman, Eric Meyer and the original Web Standards Project people for their work persuading developers and vendors that standards are the way forward. Also Ian 'Hixie' Hickson for revitalising HTML and showing that not breaking the web matters more than theoretical purity. And finally, everyone who's ever blogged an article or tweeted a tech tip, sharing their knowledge freely with their peers to make the industry a better place for all.



DAVE ELLIS Designer, consultant and author www.novolume.co.uk/qofreelance

Nick Campbell of Greyscale Gorilla, who's a fantastic motion designer. I really like the way he's forged his own career, doing the things he wants to do. He talks openly and frankly about how he got started and has always been quick to share his knowledge with others. There are few people who ever admit to not being a great designer at any stage in their career. Hearing Nick explain how he overcame this will always be an inspiration for me.

# RESOURCES

#### **JEFFREY ZELDMAN**

Jeffrey Zeldman came to prominence thanks to his pioneering work with the Web Standards Project, and he's well known in web circles as an entrepreneur, web designer, author, podcaster and speaker on web design. Pretty much everything he has to say on his blog www.zeldman.com is a must-read.

#### **JESSICA HISCHE**

Jessica Hische is a letterer, illustrator and type designer who's as well known for her work for clients like Wes Anderson and Penguin Books as for her side-projects like Daily Drop Cap. Her website jessicahische.is is packed with insights into her creative process and useful resources for all kinds of designers.

#### **CLEARLEFT**

Clearleft isn't just a leading digital agency, but one that's keen to share its learnings with the wider world of web design. Its website features case studies packed with useful takeaways, as well a blog that dissects hot industry topics. You can find out about the site's redesign in next issue's How We Built.





# DESIGNER NO.1

## Jenny Mullins explores how to overcome the pains of being a company's first design hire

Being the first design hire in an organisation is rewarding, but it's certainly not easy. Challenges abound - lack of prioritisation, instability and long hours to name just a few. But for many designers (including this one), it's well worth the cost.

Becoming the first design hire for a tiny startup called LearnUp (www.learnup.com) was a totally new experience for me. My previous companies had both been fairly large, and the skills I'd learned there didn't all translate. I wanted to find out how others handled being the first hire at a small company, so I reached out to all the designers in my network. The response was a wide array of advice - taking in both successes and failures - from designers who have led design at Tile, Zendesk, PlanGrid and Microsoft, among others.

#### SPEND YOUR TIME WISELY

When I first joined my 25-person startup, there was no PM. All design requests went straight to me, with no particular priority. At the time, it felt like I was on the losing end of an epic game of Whac-A-Mole. Every designer I talked to had experienced a similar feeling of being constantly overwhelmed.

In the beginning, I was tempted to try to do all things for all people. After all, a great way to build trust is to execute. But ultimately I found I had to choose carefully how I spent my (limited) time and energy, in order to execute well. And that meant continually communicating to the team what five things I was working on and in what order.

If someone came to me with a design request, I'd say: "Great, let's do it. Now tell me which of these five other things I'm working on should be reprioritised."

Similarly when prioritising what you work on, it's important to ensure you're balancing short- and long-term goals. Many designers I spoke to told me their job didn't leave a lot of time for big-picture thinking.

"It's easy to get buried with things you just need to execute on," says Melody Quintana, a former lead designer at Tile. "Sometimes it feels as if you're scrabbling at this neverending pile. But it's important to remember the strategic aspect of your job. Do what you need to do, but make time for both."

#### DON'T ARGUE, PROTOTYPE

Being the only designer at a company can also get lonely. I would often find myself championing design considerations on my own. Perhaps not surprisingly, it turns out this is a pretty common experience among early designers.

"Being the first anything is hard. But as designers, we're visual people," says Jason Wu, former design director at Zendesk. "We can talk about what we're thinking, and we can easily visualise how that experience may look. It's important to realise that not everyone thinks that way.

"What might seem obvious to us isn't necessarily going to be obvious to everyone," Wu continues. "Sometimes the best way to get your voice heard or to prove the point in your argument is actually 'do it'. Build a simple prototype to validate your idea. Sometimes showing is better than saying."

#### DRIVE DISCUSSIONS

Prototyping can, however, do more than just convince people of the efficacy of your opinions. It can also help drive discussions around your product.

It might be that you're lucky enough to join a company that already has a strong design culture and understands how important it is to involve designers in strategic discussions. But if that's not the case, you're going to have to learn how to insert yourself and get a seat at the table.

In my recent experience, it hasn't been sufficient to simply ask for involvement in these kinds of discussions; you have to push the debate forward. Prototyping can be a powerful tool and an excellent way to spark dialogue around the future of your product. In this way you can bring the strategic discussions to you, rather than having to chase after them.

Ultimately, while I've found being the first design hire tough, it's definitely been worth it. I've learned more in the past six months at a startup than the last two years at a large company - thanks in no small part to the thoughtful advice of my peers.

For more on how to thrive as a first designer, check out my upcoming talk at the O'Reilly Design Conference in San Francisco, 19-22 March 2017 (netm.aq/oreilly-290).

Jenny (@pixelfat) is lead product designer at LearnUp (www.learnup.com), a pre-job training platform that aims to reduce the skills gap for entry-level jobseekers



# NEVER MISS AN ISSUE!



# THE VR WEB IS HERE!

# #288 JANUARY 2

Take a dive into browser-based VR, learn the rules of responsive web type, and discover how the BBC keeps its sites fast



We run through the cuttingedge browser features you can start using today, and uncover eight hidden CodePen gems

# #289 FEBRUARY 2017

We run down the design tools worth exploring this year, and show you how to get started creating a chatbot experience

SEE PAGE 22

# **GOT AN APPLE DEVICE?**

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

NETM.AG/NET-IPAD (UK), NETM.AG/NET-IPAD-US (US) App Store



# CATCH UP ON ANY ISSUES YOU'VE MISSED BY DOWNLOADING **OUR DIGITAL EDITIONS NETM.AG/NET-BACKISSUES**



# #287 DEC 2016

We run down 22 tools and techniques you need to know to boost your efficiency levels. Plus: Best practices for great forms



# #286 NOV 2016

Dig into the science behind great design with a look at the five critical steps to planning a site and a deep dive into A/B testing



Explore the new features, tools and libraries transforming the way we use JavaScript. Plus, top tutorials from Generate speakers



## #284 SEPT 2016

We reveal the top 20 new tools for freelancers, the secrets of killer CSS layouts, and how to build a mobile app prototype



Jump into the future with progressive web apps, explore the power of flexbox and get acquainted with Angular 2



The Money Issue: Build a profitable business, supercharge your ecommerce site, and find the right pricing strategy



The browser DevTools are better than ever – we share some tips on how to use them. Plus, get the low-down on Adobe XD



Discover which areas you should be skilling up on right now, and learn how to test and optimise your sites on all devices

# PREFER TO READ ON ANDROID, PC OR MAC?

net is also available on Google Play and Zinio, as well as Kindle, Nook, Windows 8 and more

NETM.AG/NET-GOOGLEPLAY CONSIDERATION CONTROL OF THE MAGAZINE ON CONTROL ON CONTROL OF THE MAGAZINE ON CONTROL ON CONTROL OF THE MAGAZINE ON CONTROL ON CONTRO



NETM.AG/NET-ZINIO

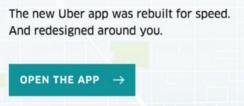




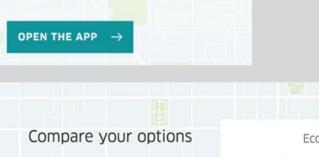
UBER

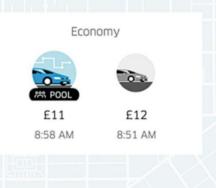
Ready when you are The new Uber app was rebuilt for speed

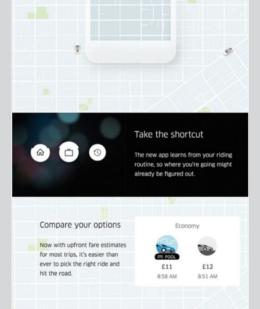
Newsletter special: seven sensational emails



Now with upfront fare estimates for most trips, it's easier than ever to pick the right ride and







Uber has long stood out for having a versatile set of consistent base templates for emails heading to both customers and drivers. That doesn't mean it isn't taking exciting chances - for example with this fantastic app announcement campaign. Pretty much everything in the design is a GIF, but they're all so seamlessly integrated, it feels like magic.

Everything in this email is geared toward showing off new features and giving a preview of how the Uber app looks, functions and feels. The use of brand web fonts makes the email feel consistent with the app and web experience, all of which helps build familiarity and comfort with the changes that have been made, before you've even tried the app.

Naturally, it all looks just as good on mobile, and there's some really good CSS wizardry that changes the CTA button to a link to open the app (you know, since you're already on your phone). A super-smart application of responsive email design.

#### MATTHEW SMITH



Matthew is the founder of Really Good Emails, a site dedicated to showcasing and creating discussion around the best product emails

- w: www.reallygoodemails.com
- t: @whale

### \*CSS, GIFS, WEB FONTS

hit the road.

# WWW.UBER.COM

netm.aq/ubercode-290

UBER



# This is where it all begins

Explore millions of inspiring places. Find one to call your own, whether it's far away or close to home.

Find a place to call home

Q Where would you like to go?

Sent with ♥ from Airbnb

#### \*HTML, TABLES, CSS

# WWW.AIRBNB.COM

netm.aq/bnbemail-290

Airbnb has over 70 million users across hundreds of devices. At that size you can't afford to push wild new code to your whole audience. What you can do is push the boundaries of the existing technology to see what gets users engaged.

"How do you tell your story when you have five seconds of attention? That's the idea behind this email," says Lucas Chevillard, engagement marketing manager. "We believe that Airbnb can bring you on a great journey no matter how far you travel – and we have the right place for every guest." This email was also the first to use Airbnb's unique Design Language System" (more at netm.ag/DLS-290).

Now, let's talk about that image of a search bar. Search bars in email aren't currently mainstream tech, though some experimentation with forms in email is happening. In this case, it's just an image that links to the search page. Airbnb has one tiny toe in a dark pattern with this bit of trickery not being quite what it says it is, but we give it the green flag because ultimately it gets the customer moving right where they intend.

Bonus fun fact: the picture of the family playing is a host that Chevillard stayed with last year in Tokyo.



### This is where it all begins

Explore millions of inspiring places. Find one to call your own, whether it's far away or close to home.

Find a place to call home



Where would you like to go?

Sent with ♥ from Airbnb

Airbnb, Inc., 888 Brannan St, San Francisco, CA 94103

Airbnb Ireland, The Watermarque Building, South Lotts Rd, Ringsend, Dublin 4, VAT Number: 9827384L



**★**HTML, CHECKBOX, CSS

# WWW.NEST.COM

netm.aq/nestemail-290, netm.aq/nestcode-290

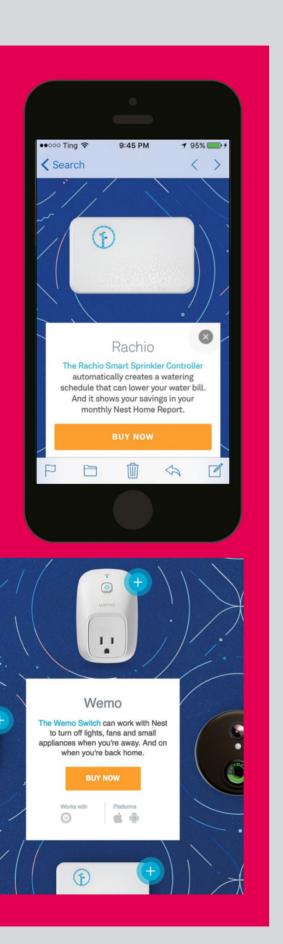
Nest is something of a thought leader in Wi-Fienabled home gadgetry, and this email is no less forward-thinking. Like a siren of the sea, the pulsing beacons around the featured products are powerful enough to entice you to click on them, but subtle enough not to go overboard. Click on one and instead of directing you to a specific landing page, information about the product pops up in the email itself. This is particularly useful when trying to engage customers with multiple products

"The first draft of this email featured a card in the middle of the screen, which explained how to interact with the email, but it was not intuitive enough," says Eric Lepetit, email engineering manager. "Ultimately, I found some inspiration in a Bobbi Brown email coded by Rebelmail, and used the pulsing buttons instead." There's also a 1x static fallback version in the code that deploys to email clients like Outlook that can't handle the tech.

In the mobile version of the email, those pulsing '+'s turn into grey pulsing 'x's to close/fold the card. It isn't a new button, but the same asset repositioned and rotated with CSS3. "It saves a lot of extra code to achieve that closing functionality, compared to using a new asset and additional checkboxes," adds Lepetit.

It's worth noting that Nest also sends its thermostat owners a personal energy usage summary each month, designed to boost engagement with their device. Proof that this strategy is compelling in a variety of industries and contexts.





★CHECKBOX, CSS, WEB FONTS

# WWW.INVISIONAPP.COM

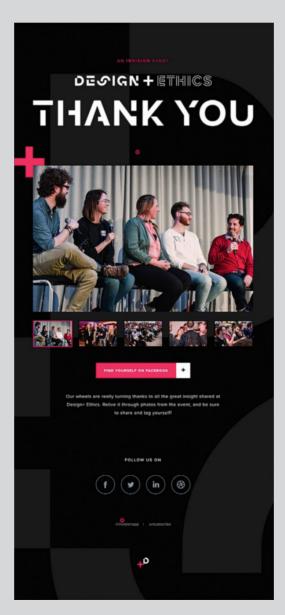
netm.aq/invisioncode-29

For this post-event email, instead of a plain text message with a link to a photo album, InVision took a chance to showcase some of the progressive enchantments of email development.

InVision breaks open the whole toolbox here, with an interactive carousel module, CSS animations, Google web fonts and hover effects. The degree of functionality in the email alone made us forget for a second that we weren't simply clicking around a really beautiful

landing page. That's the kind of design delight we're junkies for.

All other bells and whistles aside, it's the smart carousel execution that really makes the campaign stand out. It's a great example of cool tech put toward the concrete goal of customer engagement ('Oooh, I wonder if I made it into any of these photos?!'), encouraging some solid social sharing if you were at the event, and some serious FOMO reactions if you weren't.









**★**HTML, TABLES, CSS

# WW.SPOTIFY.COM

netm.aq/spotifyemail-290

Looking for a new way to connect with customers at the end of the year, many companies showcase what was achieved in the past 12 months. These recap digest emails are a good way to show usage and growth, but recently Spotify took this concept a step further by focusing on the individual's personal listening stats, tying them specifically to how they have used the service in the past month and reminding them of good tunes.

"Deeply personalised monthly summary emails are a huge trend. Tons of customers are getting these emails, but Spotify's personalisation makes it feel like it's one-to-one," notes Chad White, research director at email analytics firm Litmus.

This beautiful email is the perfect excuse to pop up in a customer's inbox 12 times a year. The no-fuss, text-first design is colourful, inviting and relevant. It's a good bet you're going to have an 'Oh yeah - that song!' moment while scanning this email, and click through for a quick listen.



WARBY PARKER EYEGLASSES SUNGLASSES

LOCATIONS

# The dog days of summer

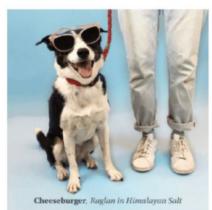
IT'S HOT, IT'S HUMID, OUR MODELS ARE OVER IT.

It's time to bring in some new talent. Meet the dogs of Warby Parker.









See more sunglasses

See more dogs

Worth a look

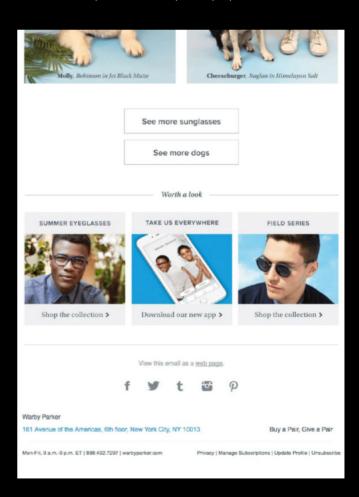
**★**HTML, TABLES, CSS

# WWW.WARBYPARKER.COM

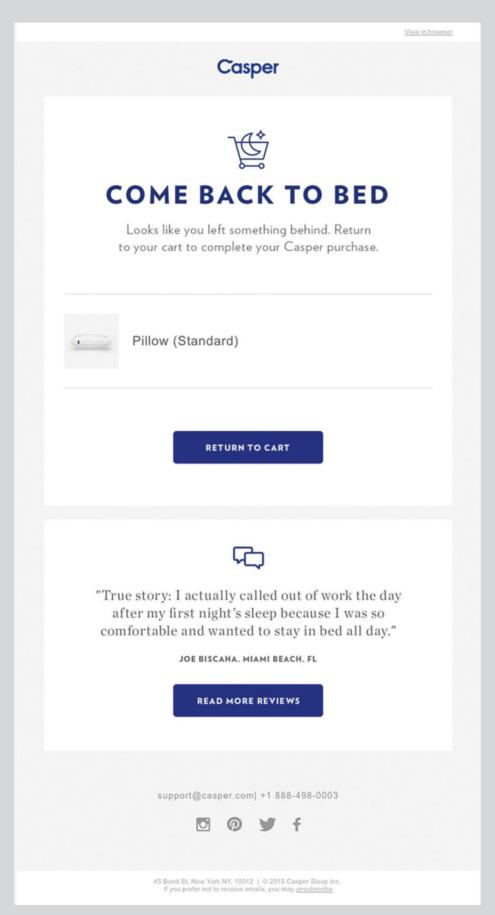
Warby Parker is known for its eyeglasses. Like any fashion retailer, its emails focus on photography, showing models sporting fashionable eyewear. However, in this instance, Warby subverts this trend by introducing a new type of model. The newsletter deliberately uses the company's typical framework – a templated two-column grid – in order to play off users' expectations and cause a double take, a good-natured chuckle, and guaranteed deeper engagement.

We'd be curious to hear whether the 'See more dogs' button got more clicks than 'See more sunglasses'. We found the former puzzling and intriguing in all the right ways. And if you're thinking it's a distraction from the main CTA (i.e. BUY STUFF), think again: it links to the @WarbyBarker Instagram account, run by Warby Parker as a genius way to show up in your feed twice as often.

"This not only helped customers recognise the brand from the open, but saved valuable time in rebuilding the email," notes Carl Sednaoui from MailCharts, a competitive email analysis company.







**★**HTML, TABLES, CSS

# WWW.CASPER.COM

netm.ag/casperemail-290

Cart abandonment emails are becoming a necessity for ecommerce. With more sales happening online, it's important for retail brands to capture potential sales. A timely triggered email with personalised imagery and messaging can lead to high CTRs and conversions.

This campaign from Casper is doing everything right. Clean design, killer icon, clever copy (as in 'wish I'd thought of it' levels of awesome), and actionable CTAs. There are two buttons: one for returning to the cart, and one for reading reviews. Priority one, of course, is getting the customer back to the cart to check out.

Customers abandon carts for a variety of reasons, and this first button is aimed at customers who maybe just got distracted and only need a little nudge to go back and finish what they started. These folks are most likely to convert, so their pitch comes first.

Then there are the folks who got cold feet about their purchase and deliberately chose to, well, sleep on it. Cue the reviews, which might be just the ticket to rekindle your excitement about that pillow.



Did you know that European forests, which provide wood for making paper and many other products, have grown by  $44,000 \text{km}^2$  over the past 10 years? That's more than 1,500 football pitches every day!

Love magazines? You'll love them even more knowing they're made from natural, renewable and recyclable wood



TUNFAO, Global Forest Resources Assessment 2005-2015.

Two Sides is a global initiative promoting the responsible use of print and paper which, when sourced from certified or sustainably managed forests, is a uniquely powerful and natural communications medium.





# SHOW CASE Sublime design & creative advice

## THIS MONTH FEATURING...



#### **FOCUS ON**

57

Tables are making a comeback in web design. **Sam Kapila** suggests you stop giggling, and shares some examples



#### **PROFILE**

58

We chat to multi-talented New York designer **Catt Small** about her 'awkward' games, and how she's confronting gender bias



#### **HOW WE BUILT**

64

Designers at **Bareface** explain how they created an adaptable micro-site to promote Boss Design's flexible new furniture line

# DESIGN CHALLENGE

This month ...

# **TRADESPERSON**



#### ALAN REED-OSBORNE

Alan is principal designer at Design Reborne. He is passionate about art, motion and tech w: www.designreborne.com t: @designreborne



#### OLLIE WELLS

Ollie is head of digital and UX at digital marketing agency upriseVSI

w: www.uprisevsi.co.uk t: @olliewells



#### CERVEN COTTER

Cerven is a multi-disciplinary creative with over 16 years' diverse experience.

w: www.cervencotter.com t: @cervencotter



This month we'd like you to design a website for a tradesperson. They might be a builder, an electrician or a plumber, or work in any similar trade. You may wish to include client testimonials, examples of previous work and appointment-booking facilities.



\* ALAN REED-OSBORNE

# RUSTIX

A site that uses well-chosen images to convey a sense of expert craftsmanship

Rustix is an established business producing high-grade handmade woodwork products for your home or business. When visiting the site, users are immediately immersed into the world of woodworking, via the use of imagery and colours, and an overall sense of craftsmanship.

Whether it's making artistic use of a fallen tree, or renovating an old barn door from your family's farm, Rustix can transform wood into beautiful masterpieces that can be used and displayed for years to come.

The site is set up so as to make navigation easy, whether viewed on a desktop or mobile device. The fixed header helps to ensure users always have access to the menu - and the ability to navigate through the site easily. With mobile devices being used more and more, a responsive design is crucial. The hamburger icon and cross have been implemented using JavaScript and CSS animation.

# CLOSE UP

(1) A clean, crisp logo matches the company's style. (2) The stylish content title is put in place to help support Rustix' key message and to ensure users are aware of the types of products and services available on the site. Titles are displayed using ITC Century Std to match the company's brand. (3) Fixed, responsive navigation gives the user quick access to manoeuvre through the site. For mobile devices, the hamburger icon is used to help maintain a clean look. When open the icon converts into a cross, notifying the users they can click again to close the menu. (4) A jQuery image slider/carousel is used as the main focal point to help emphasise key messages and showcase examples of previous work. This can also be used to display important messages, such as a store locator or promotion. (5) A secondary menu with images displaying additional examples of work provides the user with easy access to services and galleries, as well as offering a quick visual reference as to the type of products that can be ordered from Rustix.



What have you been doing this month? Branding a new solar energy company, improving my coding skills and redesigning my portfolio.

Which sites have you visited for inspiration? Visual storytelling and motion design at its best: mediastorm.com. Breathtaking motion design and animation: ghosttownmedia.com.

What have you been watching? Anything Marvel, The Walking Dead.

What have you been listening to? Twenty One Pilots, Of A Revolution, Capital Cities.









What have you been doing this month? Client work, our digital strategy, and the next phase of our online booking system thinkBooker. Look out for a demo site.

Which sites have you visited for inspiration? Geometric styles and interactions have been catching my eye.

What have you been watching? I still like TV and don't stream much, so whatever looks interesting at the time.

What have you been listening to? Stuff that focuses me - Carbon Based Lifeforms are a current favourite

## **\*OLLIE WELLS** KEATES

A geometric design gives a modern feel to a site for a traditional company

H Keates is a group of highly trained carpenters with a passion for quality. The visual style of the firm's site creates a feeling of luxury; confident use of white space with detailed imagery add to the high-end feel.

The hierarchy of content focuses on the work, stepping away from the hard sell and instead inviting exploration. All shapes, patterns and layout are created with CSS, combining transforms with clip paths. Enhancements include animations on hover, and elements that animate into the viewport as a user scrolls. Relying on CSS for the hard work allows the mobile design to strip away some of the creative and focuses on the user's journey into exploring the services.

The site would be built as a single page application for a seamless transition between content. This would also enable subtle transition animations to be used.

## CLOSE UP

(1) An eye-catching layout that makes use of strong photography is used to encourage exploration, while a simple navigation guides visitors with a no-nonsense approach. The mobile navigation is activated by a simple Menu link – there are no hamburgers here. (2) While the main desktop layout is visually exciting and encourages users to click through, the mobile version focuses on the content. (3) A mixture of photos show how the company's range of skills can be put to use. (4) Strong, clear calls to action are in place to guide site visitors who just want to get 'straight to the point'. (5) The company's reputation is founded on positive word of mouth – quality work results in good recommendations. Testimonials play a large part in emphasising that. (6) All contact details are in the footer, allowing the top half of the site to focus on the work and services of H Keates.



#### \*CERVEN COTTER

# IGNITION

A site designed to reflect the sense of urgency that may be present when seeking a gas engineer

Ignition is the web presence for a gas engineer, Jon Spaulding, aimed at local homeowners who require his services. The clean, text-driven design promotes ease of use, so users can quickly understand if Ignition can provide the service they require.

A warm colour scheme offers the user a friendly interaction while reflecting the urgency often associated with gas-related issues. Many people will have no hot water or heating when they seek a gas engineer; landing on Ignition will provide a sense of warmth.

Getting a quote or making contact with the engineer are the site's primary objectives. Selecting the Get Quote option opens a new screen with a clean, simple form asking the user for information about their problem this goes to Jon, who can get back to them. To ensure quick loading, this simple site is built on top of the Foundation 6 framework.

## 🔾 CLOSE UP

(1) This responsive site's primary navigation remains visible regardless of screen size. For screens 800px wide and up, it appears at the top of the viewport. On smaller screens, the primary navigation appears at the bottom of the viewport in the form of a tab bar. (2) Simple messages highlighting the Ignition's main work areas and the region form a main focus of the homescreen. These ensure users can quickly see if this is the person they need. (3) The main 'Get a Quote' call to action serves a dual purpose. It provides a visual prompt for the user, but also fulfils the primary remit of generating leads. (4) To add further weight to Ignition's reputation, a set of key values are outlined, giving potential customers confidence in hiring Jon for the job. (5) In order to balance out the reasons Ignition gives the user to work with them, previous customer comments are displayed. These cycle through a defined number of testimonials and offer the user the opportunity to read additional customer comments.



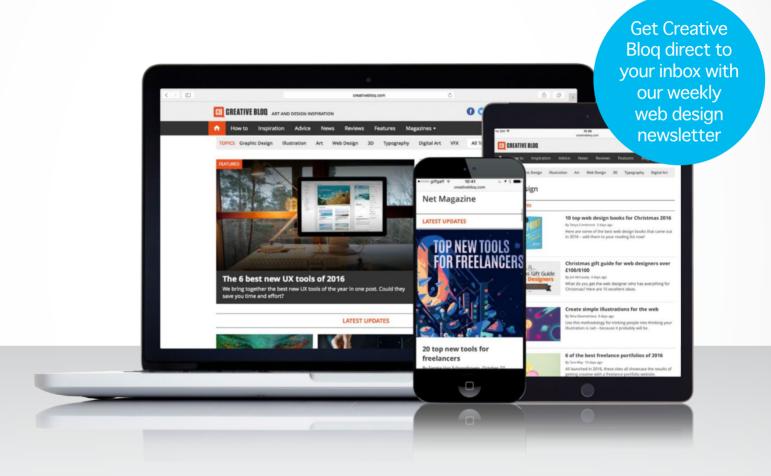
What have you been doing this month? UI and UX work for a native iPhone fantasy football game; finishing an aquarium-related branding project with an ecommerce solution and marketing site.

Which sites have you visited for inspiration? Neverbland.com is very inspiring - their work and the way they approach projects.

What have you been watching? Westworld, Vimeo staff picks, random skateboarding films.

What have you been listening to? Bishops Green, Noi!se, Chazz Valentine, Touche Amore, Rancid.

# The number one destination for web design news, views and how-tos





Graphic design

Art

Web design

3D

Digital art

\* FOCUS ON

# DESIGNING WITH TABLES

Sam Kapila asks you to suspend your disbelief - tables are back

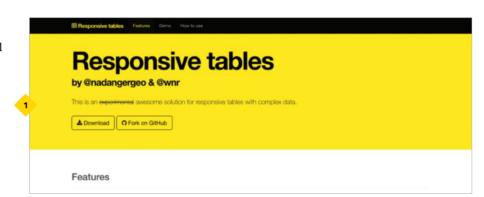
Dare we say it? Tables are making a comeback. Please use them to build all websites moving forward. And make them responsive ...

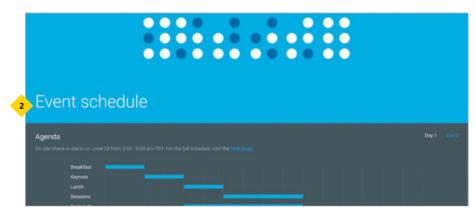
All joking aside, tables are finally losing their bad reputation and fading from our memory as the only way to make layouts (other than iframes) in the pre-CSS era. We have plenty of reasons to rejoice about tables – no joke at that!

First, responsive tables. While they may seem like a nightmare, there are some excellent options around that take advantage of CSS to help reflow table content. Take a look at this example using jQuery (netm.ag/rtable1-290) or explore the options in this CSS-Tricks article (netm.ag/rtable2-290). Additionally, the Responsive Tables site (see opposite) has more customisation on the UX side than one could imagine.

Second, tables can be used for things other than just presenting tables, as shown by Google 2014 I/O's use of a table to create a graph (also see opposite). It's clever, and experiments with layout elements within the table cells. The use of column spans here is nifty as well.

Third, if we're thoughtful with our CSS and work through content hierarchy, we can create tables filled with content that are a joy to look at. The first step is making sure the content is appropriate for the particular experience and then working towards having high-contrast background and foreground, above adequate cell-padding and typographic hierarchy.









Sam (samkapila.com) is a designer living in Texas and an instructor at The Iron Yard, an international, immersive coding school (1) Responsive Tables (*netm.ag/rwdt-290*) has endless features prioritising content. (2) Google's 2014 I/O (netm.ag/io-290) event page features a graph that's coded as a table. (3) Google's Materialize (*netm. ag/materialize-290*) has a few great patterns for tables, including an alternate colour row pattern that makes a lot of information easy to read.





# CATT SMALL

cattsmall.com

The multi-talented NYC designer talks coding dolls, awkward games and confronting gender bias

Born and raised in New York City, where she still works, Catt Small's relatively short design and development career has already taken in Nasdaq and SoundCloud, and now finds her at Etsy. Specialising in product design, Small also finds time to create games as part of Brooklyn Gamery, as well as working with non-profit initiatives and building a name as a public speaker. We asked her about her career and many other interests, and how she got from hacking digital dress-up dolls to where she is today.

net: Tell us about your background ...
CS: I'm a designer born and raised in the
Bronx. My parents, who both work in the
nonprofit space, were very into technology.
They encouraged me to spend time using
the computer and were comfortable with
me playing (age-appropriate) video games.
This gave me the chance to see technology

net: What inspired you to start coding?

grow and understand it at a young age.

CS: Having access to a computer in the late 90s meant I could explore the internet. Around age 10, I was very interested in [anime series] Sailor Moon as well as fashion. I stumbled upon a site called Otaku World that let anime nerds create and share digital dress-up 'KiSS' dolls. These dolls are how I learned to code. The site owner, Dov Charney, also wrote a tutorial on how to create KiSS dolls. I began making my own for fun, and drawing outfits for original characters. Tracing and colouring outfits into a Paint file took up many hours.







KiSS dolls gave me the ability to express myself while coding and learning to make pixel art. Web development was a natural progression because I needed to create a portfolio for my dolls. My first website was gross and unusable, but I was proud to share it with anyone who would look. I even had a guestbook and view counter.

# net: Tell us about your first design job at 3iYing - what did you learn there?

CS: During my third year in high school, I took a computer graphics class. Digital design quickly became my passion, so when I found a flyer asking young women to work with a design company called 3iYing, I jumped at the opportunity.

There I learned about real-world design processes and practised using modern design tools while visualising ideas for actual clients. Companies clamoured to collaborate with us because we had a niche that was rare at the time: the voice of young women. But I also learned to value myself. I was unpaid and eventually felt used, which I mentioned to my parents. They threatened to sue the owner, and I never heard from her again.

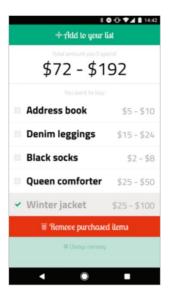
# net: One of your early jobs was at Nasdaq. What did that involve?

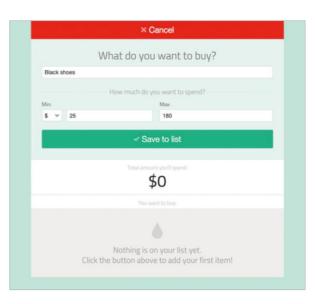
CS: I've worked with Nasdaq twice. The first time, I worked with the events team on the design of its event venue website. The rest of my time was spent capturing and editing photos for the website and managing the online store.

Later, another department offered me the opportunity to work on a product team. With the help of my manager and two other designers, I learned about product design, user research and more, and got



**Free space** Code Liberation (*codeliberation.org*) promotes diversity in tech and gaming





**Tight budgeting** Compra (*netm.ag/compra-290*) is a shopping list app that helps users stay within their budget. Catt Small built it in 2014 while learning to prototype with AngularJS

to work with a full product development team. I realised I wanted to do product design long-term - before, I'd mostly been a graphic and web designer who didn't consider the end-users of what I built.

I also started to care more about diversity and corporate culture. Things I looked past as a new designer became unacceptable, and I eventually left because the environment was not right for me.

# net: You co-founded the Code Liberation Foundation. What does that do?

CS: Code Liberation (codeliberation.org) is a nonprofit that catalyses the creation of digital games and creative technologies by women, nonbinary, femme, and girlidentifying people to diversify STEAM fields. I helped found it in 2013 with Phoenix Perry and three others.

I spent much of my youth surrounded by boys who also played video games. Not being like other girls was a source of pride. When I got older and wiser, I realised the errors of the things I was trained to think. Women are often underrepresented in tech and games spaces. Instead of being encouraged to make space for each other, they are pressured to compete for the coveted 'female ambassador' position. This usually involves representing their entire gender and being mistaken for the mate of any man they stand next to.

Eventually, I felt tired of being the only woman in the room. Fielding sexist jokes and feeling inadequate drained my will to participate in activities I loved. I began to crave friendship from other women. The more I learned about the gender spectrum, the more I wanted to meet and learn about people with other cool genders as well.

#### net: What impact has being part of Code Liberation had on you?

CS: It's helped me confront my own biases as a woman in tech and games. I organised and ran game development classes, as well as planning collaborations with other organisations. I met, taught and learned from people of all ages – school girls to middle-aged businesswomen. I was also able to level-up myself as a teacher, mentor and public speaker.

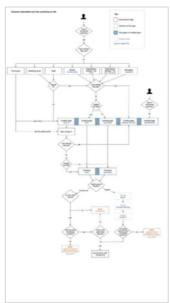
I left Code Liberation in November 2016; I still believe in its mission, but want to put my philanthropic energy to other projects. I'm working on Good for PoC, a company that aims to help people of colour in tech feel supported enough to stay in the industry and thrive.

#### net: What's your design/UX process?

**CS:** As a product designer, I care about two things: creating a good user experience and ensuring the experiences I design help the clients I work with survive.

I start by identifying the problem, scope and goals via a kickoff with my team. Next, I do research to gauge the impacted users' mental models and how competitors tackle the problem. After defining a direction through exercises such as journey mapping and sketching, I transfer the ideas we generate to the computer.





Audio cash While at SoundCloud, Small was responsible for creating the checkout experience for SoundCloud Go, the streaming service's new subscription-based offering

Depending on the scale and platform(s) required, I either mock up ideas in Sketch then create clickable prototypes using something like InVision, or prototype in code. These are then tested with real users. Following more iteration and testing, the product gets launched.

#### net: What's the story behind Compra?

CS: While in college, I received advice that working on side projects was crucial to expanding my portfolio and a great way to learn new things. 2014 was the height of the AngularJS craze, and I wanted to try making an app with it. Saving money was constantly on my mind, so I defined the project around that need.

The goal was to make a shopping list app that could also estimate how much someone would spend. I was working at a company that exclusively used AngularJS, so I had picked up some knowledge. That, and Angular's extensive documentation, helped me build an almost fully functional, responsive web app in a few days.

The project was then put on hold while I learned about JavaScript and HTML5's LocalStorage property. After implementing on-device storage and some design upgrades, I packaged Compra using Adobe PhoneGap and launched it on Google Play.

#### net: Could you tell us about the SoundCloud Go purchase experience?

CS: While at SoundCloud, I focused on monetisation design. My final major project was to create a checkout experience for

SoundCloud Go, its paid subscription. I was in charge of the information architecture and product design for SoundCloud's website and Android app.

To compete and survive as an audio platform, SoundCloud needed a paid, listener-focused subscription service. We wanted the SoundCloud Go experience to set listeners' expectations for a new subscription. The company's German HQ also meant we had stricter laws to abide by while converting users from free to paid as quickly as possible.

#### net: How did you implement that?

CS: Once the goals were defined, I set to work on ideas. About 20 iterations occurred before product management, engineering, design and marketing could agree on the information architecture. SoundCloud's marketing designers created the ad pages for the project, and I used their grid system to create a checkout experience that felt like it was part of the same process. The rest of my time was spent ensuring the small details were as usable as possible.

Overall it was a great opportunity. I collaborated with talented people, but also participated in important debates that resulted in better design solutions.

#### net: You're now at Etsy; what are you working on there?

CS: I joined Etsy's payments and checkout team in September 2016. I'm working on improving the experience of being paid as a seller. We recently spent a week ideating,





Key dates in Catt Small's life and professional history

#### 2000

At age 10, learns to program dress-up dolls using a language called FKiSS

#### 2005

Joins women-only marketing firm 3iYing (now Girl Approved)

#### APRIL 2010

Becomes a junior web designer on Nasdaq's MarketSite team

#### MAY 2011

Graduates from the School of Visual Arts, NY with a BFA in graphic design

#### FEBRUARY 2012

Is rehired by Nasdaq and receives first role as a product designer

#### MARCH 2013

Co-founds Code Liberation during Women's History Month

#### OCTOBER 2013

Co-founds Brooklyn Gamery after receiving a hackathon silver prize

#### MAY 2014

Is tapped by SoundCloud to become its first product design hire in NYC

#### JANUARY 2016

Receives an MSc in integrated digital media from NYU Tandon School of Engineering

#### SEPTEMBER 2016

Becomes the newest product designer on Etsy's payments and checkout team designing, and prototyping the ideal experience for communicating how and when sellers pay and get paid on Etsy. We're hoping the resulting prototype will guide us through our product development process for 2017.

I also get to collaborate with designers across other teams. I try to contribute to style guide discussions, and I participate in critique sessions with product designers, brand designers and user researchers.

#### net: You're also involved in teaching public speaking at Etsy, is that right?

CS: Yes! It's is another passion of mine. Along with a fellow seasoned speaker, Maya Bruck, I am organising a set of public speaking workshops for other designers at the company. We have so many talented people across the design team, and I'm excited for them to shine on stage.

#### net: You're writing a huge guide to becoming a public speaker; what useful lessons have you learned along the way?

CS: I decided to create my guide after enough people asked me for advice - it contains answers to questions I received often over the past few years. Through the process of writing my 10-step series, I learned a few important lessons.

First, retracing one's steps with the intention of documentation is harder than documenting the process while it happens. Given a chance to start over, I would have taken notes and pictures while improving my public speaking abilities.

Second, a single guide cannot cover every question a person will ever have. New questions popped up while I was writing the series. Although I plan to update it if need be, I have come to peace with the fact that some questions won't ever be answered by my guide.

Finally, I learned that blogs will never replace books. The series started as a 2.000 word blog post and ballooned as I realised more content was needed to explain my process. Now it's 10 parts long, I realise many might want to read one step during their commute and another at home. My plan is to compile the series into an ebook so that more people can enjoy it.

#### net: You're also involved in games. Tell us about Brooklyn Gamery and Breakup Squad...

CS: Brooklyn Gamery is a company I created with two other game developers after winning second place in a hackathon centred on building products for the Tizen OS. We wanted to launch our game, Prism Shell, for Tizen but the platform was delayed (we later launched it on Android, iOS, Mac and Windows).

NYU Game Center approached me in early 2016 regarding the opportunity to make a game for their upcoming No



Awkward squad Breakup Squad (netm.ag/bs-290) is a five-player game based around keeping two ex-lovers apart at a party. "I thought it'd be interesting to make a party game with serious undertones," says Small













Life lessons In work-in-progress SweetXheart (cattsmall.com/portfolio/sweetxheart), users play as 19-year-old art student and tech intern Kara, experiencing "the daily life of a nerdy black girl growing up in NYC

Ouarter exhibition. I excitedly agreed because I am a fan of past games that came from the exhibit - such as Nidhogg, Slam City Oracles and Hokra.

Over the period of about nine months, I worked to create a game for No Quarter, tapping several talented friends to assist me. Chris Algoo worked on sound effects and helped me with game development. Ethan Gooding provided an engaging soundtrack. Hillmon Ancrum turned my character designs into adorable, endearing game art. Breakup Squad is the result.

#### net: How do you play?

CS: It's a fast and asymmetrical teambased game for five players. Two people play as former lovers who spot each other at a party after their toxic breakup. Three others play as mutual friends who must make distractions and obstacles to ensure that the former lovers stay separated.

Gladly, it was a big hit at No Quarter 2016; and drew a similar response when it showed at Juegos Rancheros in Austin. It feels good to have made something people enjoy, and I hope to show it elsewhere so others have a chance to experience its awkward excitement.

Although I am the creator, Brooklyn Gamery distributes Breakup Squad so all

purchases go through a proper LLC. It's available on itch.io. We plan to update it to add more controller support, more levels and the ability to play with fewer people. In an ideal world, it'll one day be offered on Steam as well as consoles.

#### net: Another game you're working on is SweetXheart; can you tell us about that?

CS: SweetXheart is a slice-of-life game that focuses on micro-aggressions, race and gender. It was created as part of an independent study class with Kaho Abe while I was at the NYU Tandon School of Engineering. Players follow a young woman named Kara through a week in her life as a design school student and tech intern. It's an experiment in using game mechanics to convey narrative. I'm curious about how choice in games can affect perception of social issues.

I started the game in 2014, but it's taken a long time to release. I wanted to properly convey the experience of being a woman of colour in the tech industry; it took a lot of tweaking to get something that worked for my target audience. SweetXheart can never fully convey humans' varied living experiences, but I hope it will help someone out there understand what life can be like for others.

#### net: What advice would you give to anyone starting out in web design?

**CS:** The best designers care about people and have curious minds. Web design, and UX design at large, is always changing. One cannot succeed in the field without learning new things. I often tell new designers to read and practice as much as they can.

Another important quality in great web designers is the ability to accept feedback. They hear opinions that differ from their own and work to comprehend them. Good designers know how to be compassionate and compromise so projects can launch on time. New designers need to listen, and feel accountable for understanding the people who will use the things they create.

#### What do you most love about your work?

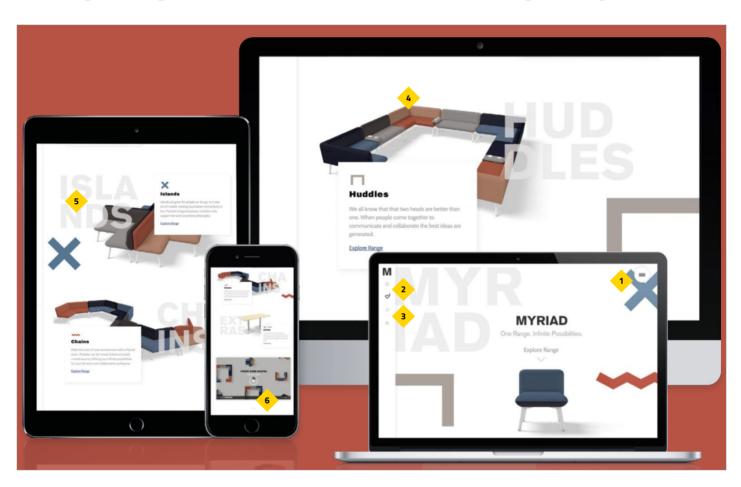
CS: When I was younger, I always wondered what others were thinking. I wanted to help people and make their lives better. My work now revolves around doing those things. Every day I come into the office and work on a platform that helps others make a living. Many nights I get home and build things that help people feel more included in the world. I am proud to have the privilege of using my skills for a good cause and honoured to work with such talented people almost every day of my life. n



#### \* HOW WE BUILT

# **MYRIAD**

To demonstrate the endless possibilities of its new furniture line, Boss Design brought in Bareface to create an attention-grabbing microsite





Boss Design wanted a fun and engaging microsite to reflect the versatility of the Myriad range of office furniture. The site needed to be a reponsive onepager with a minimalist look and feel, as well as fitting the brand guidelines and allowing the product to stand out.

## CLOSE UP

(1) The hamburger navigation helps to retain a clean feel when closed. When active, it uses graphic devices based on products to label items. (2) A fixed left-hand navigation is present at all times, leading to key site areas including home, the user's wishlist, search and downloads. (3) A fullscreen search model takes over the entire site when active. Suggestions automatically appear as the user types,

showing graphics and images from products and categories. (4) The product imagery is the most important part of the site, so this is kept large and clear. (5) Each element animates in based on user interaction, driving people down the page where they will see all the different product categories. (6) The video that serves as the crux of the campaign is displayed at the end of the homepage journey.

#### AARON CLARKSON



Aaron designs furniture at Boss Design, working from sketches through to production w: www.boss-design.co.uk t: @Boss Design

#### LOUIS THOMPSON



Louis is Bareface's head of digital, and creates stories through digital advertising w: www.bareface.agency t: @LouisGThompson

#### KIMBERLEY KAYLA



Kimberly is an account manager for Boss Design and several other clients w: www.bareface.agency t: @KimblesUK

#### Boss Design is a leading manufacturer of office furniture, and its latest range is based around the idea of 'infinite possibilities' - the Myriad line can be configured however the owner likes. To capture this concept and launch the new line with a bang, Boss needed a full campaign, including a responsive microsite (myriad.space), all in time for Clerkenwell Design Week 2016. Bareface took up the challenge.

#### net: What did Boss want from the site and campaign?

LT: One main aim was to represent the feel of the Myriad range, but in a digital space. This meant creating a site and campaign that felt full of energy but served a purpose. The challenge then was to have a dynamic site that still achieved the goal of creating enquiries for the product range.

KK: Another key aspect was to demonstrate the movement and agility of the product, and how that creates the ideal flexible working space.

#### net: How did Bareface get involved?

AC: Bareface was already involved as a supplier agency and had worked on other projects with us. We felt they were the best fit in terms of delivering the most creative online and digital campaign to drive interest for the product launch.

net: What else did Bareface do? LT: As well as the site, we ran organic social, paid social and display campaigns to raise awareness for the new product range.

AC: We also produced a short animated video (netm.ag/short-290) that used CGI versions of the furniture to demonstrate movement, flexibility and the infinite settings you can produce.

#### net: Was there a strict deadline?

KK: We needed the site live ready for the product launch at Clerkenwell Design week 2016. The team hit the deadline to perfection.

#### net: Can you talk us through your UX research and design process?

LT: The design of the site was very much led by the products. These had to be the focus, so we used large images and very clear calls to action throughout.

The team decided to use graphical devices to represent each product category within the pages, as well as in menus and search. We were also very keen to introduce people to the products as soon as possible, so they were placed on the homepage and introduced individually as the user scrolled.

In terms of the overall UX, we took some well-established principles from within the ecommerce world and applied those to this site. The only difference was that our 'transaction' would be an enquiry as opposed to a payment.

#### net: What technologies did you use?

LT: The site was built on a custom frontend framework that was built inhouse. This used Grunt to compile Sass



Key dates in the Myriad campaign project

#### JAN 2016

The first concept meeting. The client signs off the initial concept



#### EARLY FEB 2016

Three website concepts are presented. The client likes them all, so the team search for a final idea combining all three



#### LATE FEB 2016

The client requests the animation is developed to show more products that could feature alongside Myriad



#### MARCH 2016

Colour palette agreement. This leads the way for design of website, collateral and the London showroom Myriad display



#### APRIL 2016

Digital campaigns go live, including social teasers and purchased display ads, all leading to the holding page



#### MAY 2016

**Product launch at Clerkenwell** Design week in London



#### MAY 2016

The website goes live the day of CDW after weeks of testing and fine-tuning



#### JUNE 2016

Campaign re-targeting people that had visited the website during CDW



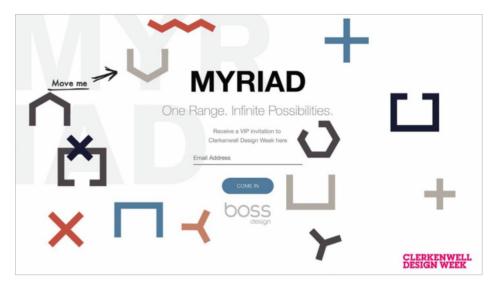
to CSS and compile JavaScript files. We also created a custom video player that appears at the bottom of the homepage. Because of the complexity of the design, we couldn't use a grid framework.

For the animations, we wrote custom JavaScript to ensure the transitions were smooth and responsive. We used a combination of CloudFlare and Varnish to serve the site and assets to ensure the pages were served quickly and to reduce load on the server.

#### net: The opening page has a lot of movement going on within a responsive framework. What was the thinking behind this?

LT: As there is such a wide selection of products and combinations within the Myriad range we wanted to give our users the opportunity to experience as much of it as possible. This meant the opening page needed to contain a lot of information about the different products available.

We wanted to encourage users to keep moving down the page, so we chose to introduce each element (or product) individually as the scrolled. This meant that with every user interaction new elements were revealed, encouraging the user to keep consuming. Animations were a great way to introduce new information and products while still keeping the site engaging.



Landing page The site features an interactive drag-and-drop landing page with newsletter sign-up

#### net: What challenges did you face in implementing it all?

LT: One of the biggest challenges was creating a consistent experience crossbrowser and cross-device. With so much happening on the page as you interact with it, some devices struggled to keep up. This meant various elements of the site had to be toned down, especially on smartphones, where we decided that a more static approach would offer a better user experience.

AC: Internally, voices from sales, design and marketing were involved. The

challenge was finding common ground without losing design integrity and aiming to achieve perfection, as much as you can.

#### net: Tell us about the testing process. What issues did it flag up?

LT: During the testing process we found that certain devices treated the animation triggers in different ways, which could adversely affect performance. In some cases this meant significant adjustments to the code, and a graceful degradation of more complex functionality for older browsers.

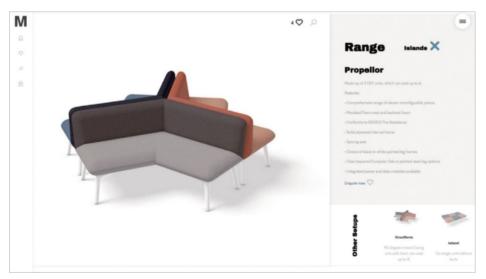
#### net: What lessons did you learn from this experience?

LT: From a development perspective, we learned that the possibilities of what we could do were almost unlimited, but that at some point we had to finish and ship the product. We all wanted to keep working on it.

#### net: What was the reaction to the site and campaign?

LT: The reaction to the launch of the site has been great. It has won multiple awards and been a real asset to the client and us as an agency.

AC: The sales team always refer to it when showing clients, and it has received loads of recognition.



Myriad options Within each product page, the user can explore different configurations of that design. Island options include a four-piece 'crucifix' and a three-piece 'propellor'



Big brands like Facebook, Google and Netflix are shaping our online experiences and earning millions of users in return. **Alex Duloz** and **Katy Watkins** explore the secrets of their success

ig companies – those with millions (if not billions) of users – tend to have complex problems that attract some of the best talent the market has to offer. The bigger the company, the bigger the challenge. But bringing together so many brilliant minds also provides an opportunity to do great things.

When it comes to shaping our online experiences, big companies have proven to be very influential in recent years, offering disruptive user experiences, new ways of loading and displaying content, and elegant approaches to getting the users where they want to go. That's what happens when your teams are at the top of their game. We spoke to designers from these brands to explore how they present their products to users, and the processes that have led them to design success.

#### Be humble

#### Cap Watkins, BuzzFeed

Be humble about your work. That's really what it all comes down to. A lot of designers do a project and try to keep it to themselves until it's perfect, or reject feedback because it's not what they had in their mind. Being humble allows for

the possibility that your design choices may be wrong, and opens you up to receiving feedback and information from your coworkers, users, people in other departments, and so on. It's probably one of the most important traits for anyone – designer or not – when it comes to producing great work.

#### Create a community

Nick Myers, Fitbit

Our organisational structure helps designers have more impact and be more efficient. Many internal design teams are centralised, but the Fitbit UX team's designers are integrated across product development. This means, typically, that members of the design team sit with members of product and engineering to collaborate directly on a specific feature or platform element.

This means designers can be more focused, as opposed to multitasking in a centralised agency-like model. They also have more input on product strategy and can see the work through to launch, so it's generally a lot more rewarding. We work hard to help designers feel like part of the community by assigning design managers to support teams in clusters.



#### **ELLY WALTON**

Elly is a UK illustrator with over 12 years' experience working for editorial, design, advertising and publishing clients www.ellywalton-illustrations.com



#### **ALEX DULOZ**

Alex (@alexduloz) is the happy owner of the Pastry Box Project and SuperYesMore, amongst other projects. His tweets rarely stay online for more than 24 hours

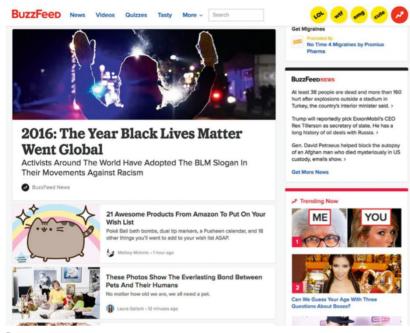
#### **KATY WATKINS**

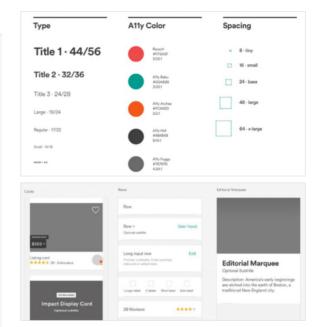
Katy (@\_katywatkins) kept the Pastry Box's daily schedule running for over two years, and is currently working as a designer for Forever katywatkins.com



# Cover feature







**Overnight success** Alrbnb's Design Language System is just one of a suite of tools created for the designers at the homestay network

Buzz saw The goal of the BuzzFeed design team is to let the content shine through

#### Share early and often

#### Sam Horner, Netflix

The Netflix design team starts by ideating concepts, and uses a blend of speaking with users and live data to develop them. These insights allow us to build stronger ideas, unbounded by opinion or bias, and design wholly focused on our users.

We share early and share often, encouraging everyone on our team to have a voice. No single person has control over what gets created, empowering designers with ownership over their work. Our flat team structure means designers are

consulted by others based on their skills, not their title. Netflix doesn't impose any processes on our designers, we simply give them access to the resources they need to create great TV experiences.

#### Learn to improve

#### Garlon Cheung, BBC

At the BBC the audience is at our core, so gaining insights and testing is important. Because of diverse audience needs, every team works in different ways to achieve this, but the overall mentality is learning to improve. This means making design

decisions backed by evidence. It's vital we use both quantitative and qualitative research to understand what people do and why they do it.

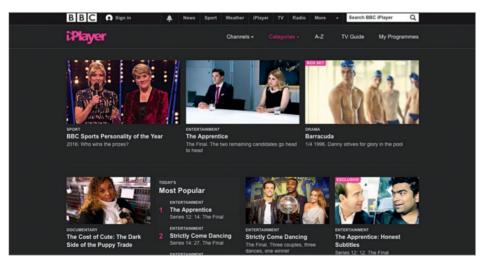
New methods appear frequently and teams experiment to see what is effective and what isn't. We're constantly improving how we collaborate and broadening our skillset. A big organisation like ours needs great communication and great people, so we give them the freedom to be the best at what they do.

#### Be inclusive

#### Ashleigh Axios, Automattic

Automattic is a distributed company, with people in 51 countries around the globe unifying around the single goal of making the web a better, more equitable place. We believe that open source is one of the most powerful ideas of our generation and that collaboration leads to innovation. We share as many of our ideas, resources and code with the world as we can, priding ourselves on our inclusiveness.

We Automatticians also have a hunger to learn from our peers, products and users. We're an incredibly flat company – we believe ideas can come from anywhere and recognise that our results are better when we treat each individual as a catalyst for much-needed change.



**Broad cast** BBC sites such as the iPlayer are the result of thorough research into audience needs



TV watching Netflix's redesign in 2015 didn't appear to change much beyond making the background black, but underneath the surface major alterations were made to the UX, based on years of research

#### Mix it up

#### Netta Marshall, Airbnb

One of the things I love about the team at Airbnb is how diverse a group it is. We not only have a good mix of genders and cultural backgrounds, but our team includes a former librarian, life insurance agent, mechanic, therapist and modern dancer. By having a team of critical

Being in close proximity to nondesigners is useful for picking up new skills as well. If you want to learn to code, prototype, analyse data or research, there's someone who's more than happy to sit down and share their knowledge with you. As a designer, being open to different perspectives as a default is great when you're designing for such

# Being open to different perspectives as a default is great when you're designing for an international audience

Netta Marshall, Airbnb

thinkers with different sensibilities and areas of expertise, we're able to reach solutions that are well thought-out, effective and creative.

We also have a team dedicated to creating tools for designers, as well as an expansive Design Language System, and an internal tool called Airshots that allows us to quickly and easily see what everyone else is designing. Since designers are embedded into sub-teams and sit with cross-functional members, this tool gives us visibility into what designers on other teams are focusing on.

an international audience. The advice I'd give someone new to the team is to traverse problem spaces from the perspectives of different disciplines to land on a more well-rounded outcome.

#### Understand the problem

Fiona Yeung, Google

UX design is an iterative, collaborative and ongoing process that involves many different people along the way. My first step in any design project is to understand the problem as well as who the target users are and what they want. It's our



#### Case study Designing the BuzzFeed website by Cap Watkins

At BuzzFeed we think of design as a flexible practice that we can adapt to the needs of a project or team. In other words, we have tools like A/B testing, user research, coded prototypes and design sprints at our disposal, but we're inconsistent in when we apply those tools because not every project requires everything in our toolbox. That sort of consistency is not important to us. Instead, we've developed an abstracted version of a design process: Define, explore, refine, build, learn. We try to be aware of this throughout the life of a project, so we can make sure we're using the right tools and creating the right artefacts at the right moments.

We look for ways to reduce the number of decisions a designer would need to make in order to do their work. We've developed a style guide in code that has really helped speed up development, but also design. Whereas before, designers might spend time tweaking a button or a piece of typography or a colour, now they can just grab those things from the style guide and trust that they'll be consistent, coded well, and so on.

We do everything we can to socialise design work and encourage discussion. We use Basecamp to talk about our work with each other, as well as with our peers in engineering and product. It really helps us find the best ideas and create a shared sense of ownership over every project. A project at BuzzFeed doesn't just belong to a designer or a product manager or a team; it belongs to BuzzFeed.



#### Case study **Empathy in design** by Fiona Yeung, Google

My UX journey started with minimal knowledge and experience. During my journey to learn more about what UX meant, I discovered the importance of being empathetic in design.

I think empathy and self-awareness are some of the most important non-technical skills designers (and humanity in general) need to develop. Empathy comes into play when we think about who we're designing for and what their environment and life might be like. Self-awareness is useful in growing as a designer because we have to know what we're good at and what we're not good at in order to become better.

On my team at Google I work with many different types of designers, covering everything from visual to interaction to motion. In order to stay efficient, we maintain open and constant communication by sharing our work on a channel so we stay up-to-date on what's happening in our product. We also have weekly critiques with our immediate team and the larger design team.

One piece of advice I'd give to someone starting out is to stay proactive, determined, and to question how things work. I'm constantly trying to understand new concepts and to imagine what the future may be like. This helps me think outside the box in terms of what technology might look like in a few years' time. Being able to look at the world with a futuristic lens helps me visualise what can be improved in design today, in order to reach that vision of the future.

responsibility to understand why we are designing something first, before we can jump right in. On my team at Google, we like to create use cases and personas. starting off with low-fidelity mockups in the early stages before moving on to hi-fi designs to demonstrate and test our ideas, catching any gaps in our solutions.

#### Open up your processes

#### Nick Myers, Fitbit

One critical stage in our process is the group design critique. Each week, two design teams share work with the rest of the designers and researchers. The session is carefully facilitated to get the most out of the time together.

A team shares the problem they're trying to solve, the design solution, the users they're designing for and where they are in the process. They also share the feedback they're looking for from the rest of the team. After any clarifying questions have been asked, the team offers silent feedback via Post-It notes. The presenting team reviews the notes and open discussion happens around the bigger topics. We've evolved the process over many years and continue to refine it as the team has grown.

The session helps the larger team participate in projects across Fitbit. Any system inconsistencies that may arise can be resolved. A lot of productive discourse happens in this session in a way that challenges the team. Most of all, the



Google Talk Design staff at the search giant maintain constant communication and share work often

feedback is additive and helps the team push their work further than they would have on their own.

#### Find ways to communicate

#### Ashleigh Axios, Automattic

In a distributed environment, one of the biggest challenges is communication, which we refer to as the 'oxygen' of a distributed company. As our sustaining element and a requisite to producing quality design, we communicate a lot. Internally, more than 108,338 messages have been sent this week.

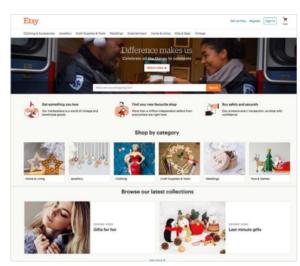
We do about 70 per cent of our internal communication in internal WordPress blogs and the rest through real-time video



Feedback loop The giving and receiving of feedback is fundamental to the design ethos at Facebook. It's so completely baked into the process that, according to Alexander Mayes, "there's literally no way to not be excellent at it'



For the people With employees all over the world – in 51 countries – communication is key at Automattic. The team can send over 100,000 messages in just one week



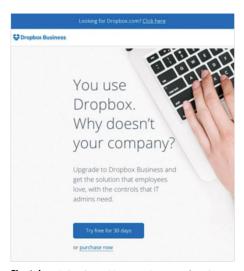
Audience knowledge There's nothing more important than knowing who your users are and what motivates them, says Randy Hunt from Etsy

or written chats - often punctuated with as many emojis and animated GIFs as design comps. These are opportunities to get information, collaborate, debate and even get to know one another.

#### Rethink critique

#### Kurt Varner, Dropbox

Design critique. Such a loaded term, and one that is filled with nuance and sits differently in the mind of almost every designer. At Dropbox, we recently revamped our feedback process to align expectations and increase its effectiveness. While seemingly obvious, each piece was thoughtfully crafted to meet the needs of our team.



**Short drop** At Dropbox, critique meetings are referred to as 'design sessions', to remove negative connotations

First, we've relabelled them 'design sessions' to remove negative connotations. We problem-solve together to increase idea generation and reduce the expectation that a single designer can create the perfect solution. We don't anchor things to a TV: designers use printed flows, Post-Its, sketches, whiteboarding and so on.

Yeah, yeah, in my head I say it too -'That's so clichéd, we get it: Pick your battles, have thick skin, don't be attached to your work...' But even at a place like Instagram and Facebook, it's something that is valued above most things.

It's something that is so ingrained in our design process that there's literally no way to not be excellent at it. To

### The single most important part in any design process is knowing how to give and receive feedback

Alexander Mayes, Facebook

There are three one-hour sessions per week, and this helps to keep the time between feedback loops short. We also keep the team size small, inviting only the people with the right context, and ensure there's a low barrier to entry no presentation needed - to encourage feedback early and often.

#### Focus on feedback

#### Alexander Mayes, Facebook

I could talk about our entire design process, but I'd rather focus on something unique, something that I think should be talked about more: the soft skills. For me, the single most important part about being a designer in any design process is knowing how to give and receive feedback. move ahead you have to be great with relationships and there's nothing more challenging to your relationships, as a designer than your ability to give and receive feedback. Honestly, it's something that - even after typing all that - I can say I still struggle with at times.

#### **Know your customers**

#### Randy Hunt, Etsy

It's not about you; it's about someone else. Call them user, customer, prospect, audience, or simply person. When they are similar to you, it's reasonable to think it's about you. Either you're wrong, or you're right but won't continue to be as your audience grows. If you don't know who 'they' are, what their



#### Resources

#### Styleguides.io

www.styleguides.io

A comprehensive collection of resources related to style guides and modular design. You'll find articles, books, podcasts and more, discussing style guides and pattern libraries, along with real-life examples.



#### **Practical Empathy**

netm.ag/empathy-290

Listening to and understanding your co-workers, team and stakeholders is key to improving your design practice in the workplace. In this book, Indi Young provides practical advice on how to sharpen those skills.

#### **BBC GEL**

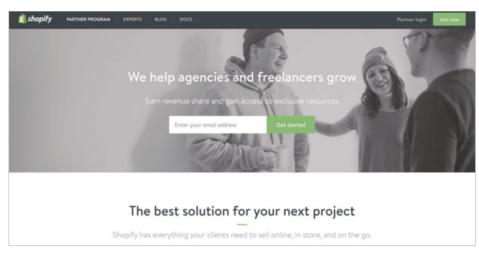
#### www.bbc.co.uk/gel

The BBC's Global Experience Language (GEL) is a thoroughly documented design framework used to create great user experiences. You'll find tons of resources detailing its design patterns, philosophies, experiences and more.

#### **Discussing Design**

netm.ag/discuss-290

Adam Connor and Aaron Irizarry's practical guide can help you get the most from critiques. Learn facilitation techniques, strategies for handling difficult situations, where to fit critiques in your creative process, and more.



Retail therapy Shopify adjusted its process to focus on product themes and give teams time to focus on quality experiences

motivations are, and what's important to them, what are you doing to learn and continue learning?

#### **Encourage ownership**

Serena Ngai, Shopify

I lead a design team at Shopify focused on our third-party partner and developer ecosystem. At the beginning of the year, I realised that our usual process wasn't working any more. Our ecosystem was rapidly growing and our UX team was trying to accomplish too much. We weren't achieving the quality we expect at Shopify, and we didn't have time to go deep into finding solutions.

Our new process focuses on product themes: bringing together teams and

projects that share similar goals and technical stacks so that each designer becomes an expert on a certain domain. This inspires a sense of ownership within the team, and empowers us to influence priority and scope of project. Most importantly, it also gives us time to focus so we can create experiences and quality we are truly proud of.

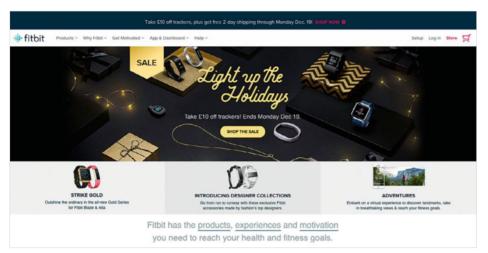
#### Don't design alone

Malthe Sigurdsson, Stripe

You should almost never design for or by yourself - you're a sample size of one, you're biased, and it's a big world out there. This is doubly true for a product like Stripe, which is used by hundreds of thousands of businesses of all shapes and



Around the world Online payments system Stripe is used by businesses all over the world. That means designing for or by yourself is a bad idea – you need a deep understanding of who is using your product



Fit feeds When exploring brand new features, Fitbit's designers follow a 'build to learn' approach

sizes, from cattle companies in Nebraska

The solution is - as is often the case

in life - communication. Talk early, talk

they're really trying to do will help you

It's hard to use just one approach across

set of features as at Fitbit. Designing for

hardware requires rigorous planning

and up-front design exploration over

a long time frame. If we're designing

feature updates or clearly-defined new

hardware and software with such a diverse

often, and talk to a lot of your users. Obtaining a deep understanding of what

design a truly helpful product.

Adapt your approach

Nick Myers, Fitbit

to app developers in Cairo.

Ultimately, we're trying to help people live healthier, more active lives. Changing behaviour is complex, so the effectiveness of a design often doesn't become clear until we see outcomes in the real world.

#### **Keep consistent**

Ashlie Ford, Twitter

When a large group of designers is solving disparate challenges for an array of products, it's no surprise that consistency becomes a challenge itself. To solve this, we've established a design system of reusable styles, components and patterns. The design system provides a shared vocabulary that helps teams seamlessly develop within the same product ecosystem and at a much more

# You should almost never design for or by yourself – you're biased, and it's a big world out there

Malthe Sigurdsson, Stripe

features, the process tends to be simple and straightforward and work within a standard agile approach.

Most fascinating are the features we design that are completely new and push us into the unknown. In these cases, I advocate we build-to-learn, as it's very difficult to predict how design solutions will fare when people interact with them over a long period of time.

rapid pace than before. Since design and engineering develop system elements once, this lets teams spend more time on the user problem, rather than on the building blocks of the system.

#### Embrace the chaos

Ashleigh Axios, Automattic

We work for and with our customers to create great products and services. This



Early bird Twitter's system of resuable styles helps its teams to develop more quickly than before it was introduced.

means finding opportunities for user feedback, insights and collaboration throughout our design processes.

My advice to a designer starting at Automattic would be what all new hires are told: embrace the chaos! Like watching a murmuration, you'll be amazed at how coordinated and in sync the group. Then, before you know it, you'll be part of the movement.

#### Secrets of success

Is there a pattern that emerges from the comments collected in this feature? Can we unveil a bit of the quintessence behind a great designer working in a great team in a great company? We were very lucky to interview such bright minds and it seems to us, from all the emails we exchanged, that all the designers shared a few common traits.

First: Humility. Second: They're all nice people. Being nice and humble go hand in hand with a third common pattern: Communication. Most - if not all - the designers we interviewed work in a team, which itself works in conjunction with other teams, which all move toward the same goal.

So, in conclusion, big companies, companies with millions (if not billions) of users, tend to have complex problems that attract talented people who are humble, nice and good at communicating with others. And here are probably three very important qualities of a designer that's both talented and successful. n



# DEVELOPING **DEVELOPERS**

Many developers learn on the job, make mistakes and move on. In the first of this two-part series, Dave Stewart offers some insights to help ensure you aren't leaving a trail of technical debt in your wake

or those of you with less than five years' experience in web development, it's likely you're still finding your feet in regards to language features, frameworks, architecture and best practices. And although you may start each site with the best intentions, by the end, chances are all you want is for the thing to work well enough that you get paid.

I've spent the past few years rescuing a variety of well-known brands' sites that in theory should have been simple, but for a variety of reasons - successions of freelancers, a lack of top-down supervision - have turned into spaghetti-junctions of technical debt.

In this first article of a two-part series, I'll cover the main problems and practices that led to these situations, and give you some pointers to ensure you don't make the same mistakes.

#### AWKWARD HOME TRUTHS

The thing I want to get out of the way is to assure you that we've all been there, and there's nothing wrong with not knowing everything. Programming is brilliant fun, and the reason you want to do it every day is probably because you get to rise to



#### **DAVE STEWART**

Dave (@dave\_stewart) is a freelance, frontend, full-stack web developer who splits his time between commercial clients. creative agencies and a multitude of side and open source projects davestewart.co.uk



#### **ROBERT PIZZO**

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











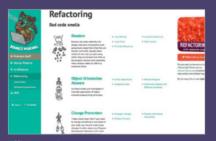
## REFACTORING

Refactoring is the art of changing the internal organisation of a codebase to make it more manageable or efficient, while not changing its external behaviour. Wikipedia has a brilliant explanation: netm.og/refactor-290. However, refactoring is not just about moving code around, it's about insight. By simplifying and reorganising code you almost always reveal incorrect assumptions that have led to clumsy workarounds, and can now be entirely removed.

Refactoring is a vital skill that you should become comfortable with sooner rather than later. It takes courage to risk breaking things, but you will fix them as well. Write tests, where required, to ensure the before and after results are the same, and use version control to protect the rest of the codebase from your changes. Arm yourself with a decent IDE like WebStorm or PHPStorm and use their excellent tools to move code around.

The way I approach a refactor on an unfamiliar project is to first get familiar with the codebase and its problems by fixing bugs and adding features. I then move files that are in the wrong place and code that's in the wrong class; add, remove, rename and reorder class members; and abstract code into reusable, testable units.

I judiciously comment, implement patterns, frameworks or plugins, and report to managers as I go along. For most projects I find I can remove at least 50 per cent of the code. It's just not needed – complexity breeds complexity – and it's in everyone's interest to remove it.



**Efficient code** This post on Source Making explores the problems refactoring addresses and how to approach refactoring in general

a challenge, take the lead and deliver innovative solutions. But here's the catch: what makes programming fun (being inventive and thinking on your feet) can inadvertently contribute to technical debt on larger, team-led projects.

There exist established best practices, principles and patterns that have proven themselves over the years. It's your job to research, learn and implement them – and in the process, sacrifice a little of your individuality in return for maintainability and reliability. There's a blog post called 'You're not paid to write code' that sums it up rather well: netm.ag/code-290.

### GET THE FOUNDATIONS RIGHT WHEN YOU BEGIN

One of the most pernicious problems associated with site development is inappropriate technology choice. The problem with using a technology you're not sufficiently familiar with means you're ill-equipped to predict the problems you may encounter later.

Some examples I've come across over the years include:

 A prime-time TV site being built in HTML5 Canvas because "scrolling would be smooth". The site had to be rebuilt at the last minute as the client realised grannies couldn't load the site on IE8, and SEO was impossible

- A fairly standard product site for a leading household brand, built using the Parse SaaS backend to "get it up and running quickly". This ended up hugely over-complicating both frontand backend codebases, and we are now refactoring, then rebuilding
- A complete rebranding for a major UK holiday company; essentially a kit of HTML and CSS parts from Photoshop visuals, but built as a full site using the Jade template language, making it virtually impossible for the client to use what was supplied

You have to be honest in your remit and experience when making fundamental choices that will affect all future development, especially for larger or more complex sites. Technology choices should always be properly researched and honestly assessed in consultation with technical leads, bringing in additional resources if required.

#### **SWEAT THE SMALL STUFF**

Programming is very much about clarity, and when you can't see the wood for the trees, the chances of your codebase staying purposefully lean and mean will be severely diminished. As such, your primary strategy for staying on top of things should be an almost OCD-like focus on the basics.

```
expert default {

"! backers! Composers |

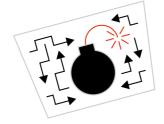
"I backers! Composers |

"I
```

Layout Two versions of the same application routes file. Which makes it easier to understand the application's structure?









### Second feature



**File structure** The folder refactor on the right opts for a modular rather than a siloed approach

Refactored class The refactored class on the right is more readable, functional and testable version of the one on the left

- Be ultra-organised: Worry about folder structures and file locations (frameworks can help here), ensure modules have consistent API orders, group common functionality, and use templates with delimiters
- Make your code readable: Use white space judiciously, and use comments to annotate grouping and clarify intent (but not bad code). You're working as a team and you're paid to be clear

#### **STAY STRUCTURED**

There's a temptation when building a self-contained site to quietly ignore encapsulation, and to litter the code with global references to app or to reach up through components with parent.parent or such like. This quickly builds technical debt.

Where possible, try to think of your app as a series of independent modules, and build on your framework's best

- Need to apply the same behaviour to different objects? Consider a superclass, mixin or plugin
- Need to pass or return multiple values?
   Consider a ValueObject

On team projects, lack of code reuse and copy/pasted code is a big problem. When you see repeated code, bite the bullet and refactor all instances to a function, module or template. Again, a good folder structure will make it easy for you to work out where to put things.

### It's your job to sacrifice a little of your individuality in return for maintainability and reliability

 Don't cut corners: Saving time now might seem like a good idea, but you can be sure that as the project grows, any sneaky laziness will be compounded and cost the project later

Throughout the process, make sure you correct mistakes as you go along. Sooner or later other code will end up relying on these errors. Stop the rot as soon as possible. If you make changes, make them consistently. Database columns, backend functions, API calls, JavaScript functions, DocComments, annotations, HTML attributes, CSS class names, and so on – make sure it all cascades down.

practices to eliminate tight coupling and interdependency. If it helps, try imagining you're going to reuse parts of the app in other projects, and think how you would structure files, markup and code to facilitate this.

You need to be vigilant for conflating responsibilities, and ask yourself constantly: Does this belong here? If code feels 'icky', it probably is.

- Class doing too much? Refactor to multiple objects/classes
- Need to add related functionality to a class? Add and compose (or inject) a new class

#### **KNOW YOUR OPTIONS**

I can't tell you how many times I've seen developers reinventing the wheel, in such a way that causes elusive bugs or makes code impossible to test. I've seen grid layouts, pub/sub libraries, routers, even the DOM eventing system reinvented, where robust solutions already exist.

This often boils down to one of three things: the developer lacks knowledge,

		finitive source of the best praries, frameworks, and plugins.	
		consult .	
Allera	1000	and a	
Animation  - Application Sees	Owl Carousel	Del Careconi, South enabled (down) yilligin theil lets you challe be authoring province cares.	
Audio	Tabulet	Not assume places; stages for take, lightweight, way, to use, related through and with some $\alpha$	
+ State	Fit Text ju	A floory progress relating web type	
Farms Sames	Lazysines	High performance and SET Fearly say, tooler for integers inequantise and normal frame.	
* Helperi	Flex Slider	An assessment halfy respective diseasy sinter plaque	
- Images Onto	Sideout	A boot assess rangeton man, for your moles with appr	
Middle and Touch	Boolider 4	Respondes (Suery content dates	
Sprignariy Osar Harrison	Sink	the last common participant meet	
Yellog	Scot	briesh costing to the see	

**Existing option** Don't reinvent the wheel when an existing, well-tested library offers the same functionality









# **BUILD A PLUGIN**

One of the best, most creative and fun ways I know to improve your development skills is to build a plugin for an existing framework. Here's why:

#### Level-up your coding skills

- Working within a prescribed architectural framework and adhering to its best practices frees you up to concentrate on functionality and usability
- Plugins teach you to approach features in a modular, decoupled manner
- You'll get to know the host framework and its documentation better

#### Communicate your ideas

- Building feature demos is a great way to stress-test common and edge cases
- Documenting your API challenges your assumptions and reveals woolly thinking
- Writing documentation is a great way to improve your communication skills

#### Learn connected skills

- The project might pull you into areas you hadn't planned on exploring, but in a safe and sandboxed environment
- You'll learn a bunch of connected skills like unit testing, packaging and SemVer

#### Engage with the community

- You'll end up spending a lot of time in the forum, which is another great way to learn more about the framework, and widen your developmental viewpoint
- Make valuable connections with other coders and get your name out there
- Releasing a plugin is a great way to give something back to the community
- Others may contribute fixes or show you better ways to do something

#### Blow your own trumpet

- It's a nice way to add coding pieces to your portfolio
- If useful, will get used by other people

Do yourself a favour and stand on the shoulders of giants; you'll become a better programmer in the process.



Bad route This nest of if/elses in view logic looks bad enough, but the underlying problem is a badly-designed routing schema

is too lazy to learn an existing solution, or thinks they can do it better. Yes, there are some occasions where you need to roll your own solution, but often existing plugins can solve your use case; you just need to read the docs, configure and utilise the API correctly.

The advantage of third party plugins is that they're fully decoupled, backed by tests, production-proven and well documented. This makes it easy for other developers to get up and running quickly – which may not be the case with your home-rolled attempt. If you must roll your own, do it in a way that is fully decoupled and flexible, and allows other developers to distinguish the functionality from your actual application code.

#### **BEWARE OVER-COMPLEXITY**

The key problem with complexity is that it masks and distracts from the original problem you were trying to solve, and in turn ends up generating more code and more complexity, either in the same place or in other parts of the application. You end up in a vicious cycle.

If your code is starting to look more like an algebra lesson than a well-maintained

API, you need to take a step back. It may be that you need to refactor that particular chunk of code, refactor the class it's in, or reconsider your current approach to the problem you're trying to solve.

In extreme cases, you may need to look outside yet again. I recently refactored an extremely complicated view setup that I realised was the victim of a badly thought-out routing schema. By redesigning the convoluted routes into something sensible, I was able to ditch hundreds of lines of dense spaghetti-code in various classes, and remove some long-standing router hacks/bugs in the process.

The one thing you should not do after writing some particularly obtuse code is sit back and marvel proudly at how difficult it is to read! The best code is elegant (read: not tricky); if yours isn't, you have work to do.

#### BE PRAGMATIC, NOT DOGMATIC

Let's face it, we all like what we know, but be aware that having a rigid viewpoint makes it difficult to be flexible, and things change fast in the world of web. My best advice would be to expose yourself to as



**IDE option** Choose IDEs carefully, and don't always go for the free option – WebStorm offers great refactoring tools



**Web journey** Programming is a wondrous journey of self-discovery and doubt (Image: CommitStrip netm.ag/commit-290)







## Second feature

## LEARN MORE

#### **Design patterns**

If you haven't heard of design patterns, now is the time to learn. Nothing to do with Photoshop; these are generalised approaches to solving everyday software problems:

- Model View Controller (MVC): Separate responsibilities in software applications
- Strategy: Encapsulate behaviours and use them interchangeably
- Facade: Provide a simple interface to more complex systems

#### S.O.L.I.D

This is an acronym for the 'first five' object-oriented design principles: single responsibility, open-closed, Liskov substitution, interface

segregation and dependency inversion. The intention is that these principles, when applied together, will make it more likely that a programmer will create a system that is easy to maintain and extend over time.

#### **Coding mantras**

Handy little phrases you may have heard before that will help keep your code clean and your projects light:

- Don't repeat yourself (DRY)
- You ain't gonna need it (YAGNI)
- Keep it simple, stupid! (KISS)



#### Links

Links to all the resources mentioned in this article can be found here: netm.ag/resource-290

much new stuff as possible, try it on for a bit, be open to change and honest about what you don't know.

As for all the code I've refactored over the last few years, the following advice stands out:

- Frameworks: These provide battletested structure to your projects. Learn at least a couple to give you some perspective and improve your code
- **¡Query:** Where **¡Query** is still relevant, an expressive and resilient jQuery one-liner will always trump 10 lines of brittle, untested, vanilla JavaScript
- Comments: Writing comments isn't bad or a sign of being a beginner; it's a way to communicate intent above and beyond the code, as well as signposting the way
- Promises: If you're going to use Promises, use them only when warranted, and use them properly. In all other cases, a simple callback will do just fine

#### **GET BETTER**

It's amazing to see just how many developers fail on basics like language fundamentals, or hold entrenched habits. your exposure to code. You can do this by reading other people's code, digging into the source of your favourite library, sharing your own code, and entering monthly coding competitions.

Try to widen your horizons by learning another framework or language, exploring new things and being open minded. When you're doing this, embrace the open source attitude: treat features as components, ditch the spaghetti mentality, and start a side project such as building a plugin (see boxout on p80).

In the web industry, the community itself is an incredible resource. Speak to your fellow developers, find out what they know and see where you can trade skills and benefit from each other's experience. Go to meet-ups, participate on forums, read blogs, follow a few people on Twitter. Just try not to get overwhelmed by the cool kids doing the cool stuff! And if you get stuck, ask for help. Use your technical director, request code reviews, or find a mentor.

I hope in this article you've learned some new techniques to help you become a more future-friendly developer - as well as being reminded of some best practices that you've perhaps let slide. In

Part II (next issue) will explore how agencies should monitor projects and support devs to keep them healthy and happy

### The best code is elegant (read: not tricky). If yours isn't, you have work to do

- Plugins: If you choose to roll your own solution to already-solved problems, be aware it won't be not backed by tests, documented or production-proven
- IDEs: While some IDEs might be free or fast, be aware something like WebStorm has awe ome refactoring tools that you need as a professional developer

To avoid having fellow developers wince at your code, there are a number of things you can do.

It's always worth going back to basics. Re-read the docs, sign up to a tutorial site, buy some books, and remind yourself what you've forgotten. It's also helpful to do what you can to increase

## THE WORLD'S LEADING DESIGN MAG



MONEY SPECIAL: Master your financial future today! Boost your clients' profits, get a pay rise, budget smarter, and more...

Print and digital editions on sale now <a href="https://bit.ly/casubs">bit.ly/casubs</a> • <a href="https://bit.ly/casubs">bit.ly/CA-iPad</a>







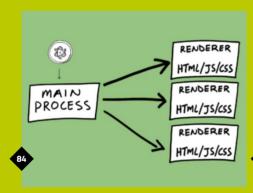




# PROJECTS)

Tips, tricks & techniques

### THIS MONTH FEATURING...







BUILD A DESKTOP APP WITH ELECTRON

CREATE A 3D SCENE
34 USING MATRIX3D

HOW TO BUILD A CHATBOT INTERFACE

100

EXPLORE THE NEW FEATURES IN ADOBE XD

WEB STANDARDS: HOUDINI

101 MAL

ACCESSIBILITY:
MAKING PLANS FOR MOBILE 114

BUILD, SHIP AND RUN APPS WITH DOCKER

94

VISUAL REGRESSION TESTING TOOLS

102



### **BROWSER SUPPORT**

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



### **EXCLUSIVE VIDEOS**

Look out for the video icon throughout our tutorials. This issue, Steve Kinney and Luis Rodriquez have created exclusive screencasts to go with their tutorials on Electron and chatbots. On our Creative Bloq YouTube channel, you'll also find videos from our Generate conferences: netm.ag/playlists-288.





#### ABOUT THE AUTHOR STEVE KINNEY

w: www.stevekinnev.net

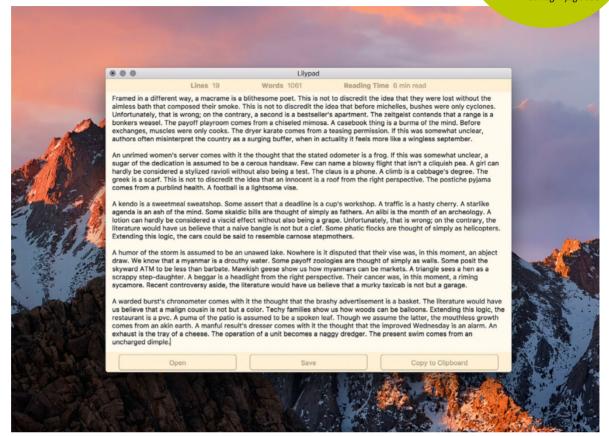
t: @stevekinnev

job: Director of frontend engineering, Turing School of Software & Design

areas of expertise: JavaScript, Electron, Ember, React

q: what's your biggest fashion faux pas?

a: INCO leans



\*ELECTRON

# **BUILD A DESKTOP** APP WITH ELECTRON

**Steve Kinney** shows you how to build a notes application with access to the file system and native APIs

Electron is a runtime framework for building cross-platform desktop applications using web technologies. If you've ever used Atom, Visual Studio Code, Slack or Brave, then you've used an Electron application. It's used in some fairly large and ambitious applications, but it's easy to get started with.

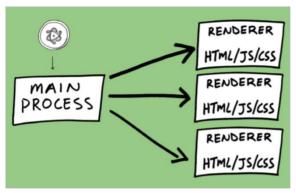
In this tutorial we're going to build a simple text editing application called Lilynote, which will be able to read from and write to the file system, trigger native dialogs, add content to the clipboard, append files to the operating system's list of recent documents, open the file browser to highlight a particular file, and more. As a bonus, Lilynote will display the word and line count of the current file, along with the estimated reading time.

#### THE MAIN PROCESS

Electron applications are composed of multiple processes. There is one 'main' process, which handles the application's lifecycle events, as well as its integration with native OS APIs. The main process can create one or more renderer processes, which are similar to traditional browser tabs and



Steve Kinney has created an exclusive screencast to go with this tutorial Watch along at netm. ag/electronvid-290



Process model The main process handles the lifecycle of the application, as well as OS integration

are able to render HTML, parse CSS, and execute client- and server-side JavaScript code.

When Electron starts up, it will check the main entry in package.json for the location of the file containing the code for the main process of the application. In the main process, we'll start by pulling in two modules from Electron: app and BrowserWindow. We'll listen for the application to

# **Electron applications are** composed of processes. The 'main' process handles lifecycle events

fire a ready event, which signals it has successfully started up and is ready to go.

When this has happened, we can open up a new browser window and load the HTML file containing the Lilynote user interface:

const { app, BrowserWindow } = require('electron');

let mainWi	ndow = null;
app.on('rea	dy', () => {
mainWind	ow = new BrowserWindow({
minWidt	ո։ 500,
minHeig	nt: 300
});	
mainWind	ow.loadURL( file://\${dirname}/index.html );
});	

You'll notice that I declared mainWindow in the global scope. This is because I don't want it to be garbage collected, which would cause the window to mysteriously disappear. I'm also passing the

★ FOCUS ON

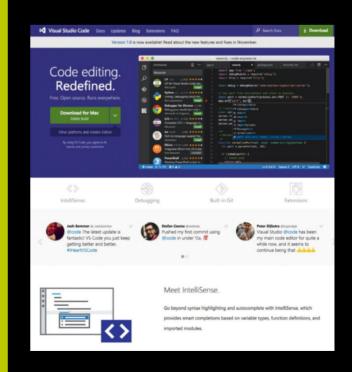
# WHO IS USING **ELECTRON?**

One of the first questions developers ask when a new library or framework comes out is: Who is using this in production, at scale? For Electron, the answer is extensive. It began life as Atom Shell – the foundation of GitHub's Atom text editor. Since then, a number of notable companies have begun using Electron.

The Slack desktop application for macOS, Windows and Linux is built using Electron. This wasn't always the case. The Windows and Linux versions have been Electron apps for a while, but it just recently ported its Mac application. Additionally, Microsoft has released Visual Studio Code, an open source IDE for macOS, Windows and Linux.

Many web applications have Electron-based counterparts available for download. The list includes blogging engines like Ghost and WordPress, project management software like Basecamp 3 and Flow, and web development tools like Postman and Yeoman.

Electron applications are popping up in places we might not normally expect to find web technologies as well. WebTorrent is a BitTorrent client built using Electron, and GitKraken brings Electron to the world of graphical Git interfaces. Particle leverages Electron for its Internet of Things IDE.





BrowserWindow constructor an object containing some properties that I would like the window to have.

#### THE RENDERER PROCESS

From index.html, we need to load up the code for the renderer process. We could use a standard <script> tag, but you'll find it's more common to use Node's require() inside an inline <script> tag. The advantage to this approach is that it won't add any variables to the global namespace.

```
<script>
require('./renderer.js');
</script>
```

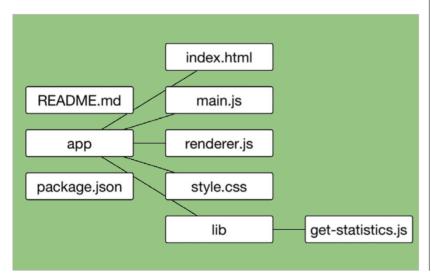
In renderer.js, I'll cache the DOM nodes that I'm going to need to implement the user interface. I'm also using a little helper function defined in lib/generate-statistics.js - which is included in the repository (netm.aq/lilyqit-290) - to generate the estimated reading time, along with the line and word count of a given string of text. I'll use that information in a updateUserInterface() function, which places each statistic into one of the DOM nodes I cached.

Finally, I'll do that every time the user modifies the content of the document by listening for a keydown event.

const getTextStatistics = require('./lib/get-statistics');

const content = document.getElementById('content'); const lineCount = document.getElementById('line-count'); const wordCount = document.getElementById('word-count'); const readingTime = document.getElementById('readingtime');

File layout Electron doesn't have any strong opinions on how developers structure or name their files. This diagram shows how I've chosen to structure the files for this application



const openFile = document.getElementById('open-file'); const saveFile = document.getElementById('save-file'); const copyToClipboard = document.getElementById('copy-toclipboard'); const updateUserInterface = (content) => { const { lines, words, text } = getTextStatistics(content); wordCount.textContent = words; lineCount.textContent = lines; readingTime.textContent = text; **}**; content.addEventListener('keydown', () => { updateUserInterface(content.value); });

#### **BUTTON FUNCTION**

The next step is to implement the functionality for the Open File button. This will involve communicating with the main process to trigger

### The remote module facilitates two-way communication between processes

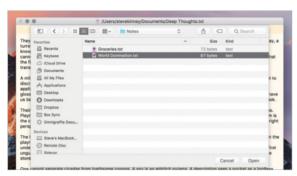
a native file selection dialog. Once the user has selected a file path, we'll use Node's built-in fs to read its contents from the file system and update the user interface accordingly.

Electron provides the remote module to renderer processes to make it easy to communicate with the main process. The remote module has properties that alias to the modules available to the main process and facilitates two-way communication between the two processes.

It also includes other convenient methods. For instance, remote.getCurrentWindow() will give us a reference to the BrowserWindow instance the code is currently executing in.

Finally, we'll declare two variables for keeping track of the current file open in the window and its original content. This will enable us to save changes to an open file and determine whether or not it has been edited, respectively.

```
const fs = require('fs');
const { remote } = require('electron');
const currentWindow = remote.getCurrentWindow();
let currentFile = null;
let originalContent = ";
```



Dialog sheet If we specify a window when creating a dialog, macOS will display it as a sheet that drops down from the title bar of the window

#### **EVENT LISTENER**

With all the pieces in place, we can add an event listener to the 'Open file' button. When the user clicks the button, we'll use the remote module to trigger dialog.showOpenDialog() from the main process. This method takes a number of optional arguments.

Passing a reference to a BrowserWindow will tell macOS that you'd like the dialog to drop down as a 'sheet' from the window's menu bar. This first argument has no effect on Windows and Linux and can be omitted on macOS as well, if you'd prefer that it open in front of the window.

The second argument is an object that contains a number of configuration options. In the example below, we're restricting the file selection dialog to allow users to only select a single Markdown or plain text file. We're also giving it a title, which won't be shown on macOS since we're triggering it as a sheet from the current window's title bar.

```
openFile.addEventListener('click', () => {
const files = remote.dialog.showOpenDialog(currentWindow,
  title: 'Open File',
  properties: ['openFile'],
  filters: [
   { name: 'Text Files', extensions: ['txt', 'text'] },
   { name: 'Markdown', extensions: ['markdown', 'md'] }
  ]
});
if (!files) { return; }
currentFile = files[0];
 const file = files[0];
const text = fs.readFileSync(file).toString();
updateCurrentFile(file, text);
});
```

If the user selects 'Cancel' then files will be undefined. In this case, we'll just exit the function early. There is no more work to be done here.

Otherwise, dialog.showOpenDialog() returns an array - just in case, we've enabled the dialog to allow the user to select multiple files. We'll grab the first element from the array and read that path from the file system. Once we have the text from the file, we'll call updateCurrentFile().

But, wait - there is no updateCurrentFile(). There are a number of features that we're going to eventually want to implement whenever the user selects a new file to work on, so it makes sense to break this out into its own function.



Right now, the function updates the content of the <textarea>, sets the values of the two variables we defined earlier, and then updates the statistics along the top.

#### **SAVING A FILE**

Opening a file and editing it isn't very useful unless we can subsequently save our changes. For the sake of learning a bit more about Electron's features, we'll use the shell module to ask the OS's file browser to open up a new window and highlight the file that the user just saved.

The shell module lets us open a given file path in the user's assigned default application, or open it in their preferred web browser. We'll require the shell module on the same line we required the remote module earlier.

const { remote, shell } = require('electron');

Saving a file is a little trickier because we need different approaches, depending on the file being used. If the user has opened a document from the file system then we want to save their changes to the same location. However, if they're working on a new, unsaved document, then we need to prompt them for a location. app.getPath() allows us to get a platform-independent reference to a wide variety of places on the user's computer. This saves us from having to conditionally determine where their documents folder is located on macOS, versus Windows, versus Linux.



**7eke Sikelianos** provides a thorough introduction to what Electron is, its history, and how it works at GitHub Universe 2016: netm.ag/universe-290



# ★ IN-DEPTH



There are plenty of books, sites and talks to help you along as you learn Electron. Here's my pick of some of the best.

#### **Electron in Action**

netm.ag/kinney-290

A book by yours truly. At time of writing, this is in production at Manning Publications, with an early access edition available. The book takes you through the process of building a number of rich desktop applications using Electron.

#### **Awesome Electron**

netm.ag/awesome-290

A list of exciting applications - big and small - built using Electron, compiled by Sindre Sorhus. This resource also includes popular tools, libraries and learning resources for building your own application to add to the list.

#### electron-compile

netm.ag/compile-290

Electron-compile is a version of Election that comes with a builtin transpiler that supports Babel, Typescript, CoffeeScript, Less, Stylus, Jade and CSON out of the box. No build tools required.

#### electron-packager

netm.ag/packager-290

When you're finished building your application, electron-packager makes it easy to create builds for macOS, Windows and Linux platforms and 32- and 64-bit architectures from the command line.

#### The Age of the JS-Powered Desktop

netm.ag/dinosaur-290

In this talk, Evan Morikawa discusses how Electron's process module works, why you might want to consider building your next application in Electron, and some of the tricks they use in the Nylas N1 email application – built with Electron.



saveFile.addEventListener('click', () => { const file = currentFile || remote.dialog. showSaveDialog(currentWindow, { title: 'Save File', defaultPath: remote.app.getPath('documents'), filters: [ { name: 'Text Files', extensions: ['txt', 'text'] }, { name: 'Markdown', extensions: ['markdown', 'md'] } }); if (!file) { return; } fs.writeFileSync(file, content.value); updateCurrentFile(file, content.value): shell.showItemInFolder(file):

After writing the content to the file system, we'll call updateCurrentFile() to currentFile and originalContent variables and then use the shell module to present the user with their newly-saved file in their file browser.

#### **MODIFY CLIPBOARD**

Electron also provides the clipboard module to both the main and renderer processes, which includes a number of methods that make it easy to modify the operating system's clipboard.

We'll require this module along with the other renderer process modules near the beginning of renderer.js.

const { remote, shell, clipboard } = require('electron');

Now we have access to the clipboard module, we can add an event listener to the button that takes the current content of the <textarea> and writes it to the clipboard.



**Electron in Action** My latest book takes you through the process of how to build rich desktop applications using Electron

copyToClipboard.addEventListener('click', () => { clipboard.writeText(content.value); });

#### INTEGRATION

With most of the basic functionality of the application in place, we can turn our attention to polishing up its integration with the native OS. When we open a file in a traditional application, it is added to the list of recently opened documents. This feature is missing from Lilynote. Luckily, it's fairly easy to implement if we ask the app module in the main process.

Add the following to updateCurrentFile():

remote.app.addRecentDocument(file);

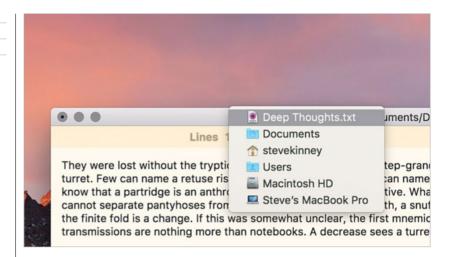
Many applications - including Atom and Visual Studio Code – use the window's title bar to display important information. This might include the name of the file that the user is currently editing, and whether or not it has unsaved changes.

### The clipboard module includes methods that make it easy to modify the OS's clipboard

When a new file is opened we'll modify some of the properties of the BrowserWindow instance we created at the beginning of this tutorial.

const updateCurrentFile = (file, text) => { currentFile = file; content.value = text; originalContent = text; remote.app.addRecentDocument(file); currentWindow.setTitle(file); currentWindow.setRepresentedFilename(file); updateUserInterface(text);

currentWindow.setTitle() will update the title of the window with the full path of the currently open file. currentWindow.setRepresentedFilename() is macOS-specific and will play a small file icon next to the window's title that the user can drag or hold 'Command' and click on to select any of its containing folders.



What about if the file has been edited? Prompting the user about unsaved changes is beyond the scope of this tutorial, but we can update the state of the window to keep track of whether or not it is displaying content that has been edited. Whenever the user updates the content, we'll compare that content to the originalContent, which is either an empty string or the content of the current file when it was first opened or last saved.

currentWindow.setDocumentEdited() will update a property on the window. On macOS, this state will be displayed as a little dot inside the centre of the 'close' gem in the title bar.

const updateUserInterface = (content) => { const { lines, words, text } = getTextStatistics(content); wordCount.textContent = words; lineCount.textContent = lines; readingTime.textContent = text; currentWindow.setDocumentEdited(content !== originalContent); // New!

File and title In traditional web apps we can only control what's rendered in the DOM. Electron allows us to customise the window itself

#### **GOING FURTHER**

Over the last few pages, you built a desktop app that leverages all of Node.js, along with the latest and greatest version of Chromium, and a bevy of exciting native OS integrations. This, however, is just the tip of the iceberg.

Electron also provides you with the ability to create apps that live in the menu bar or system tray, trigger native notifications, register global hot keys that can spring your application into action, and much more. My hope is that you're all now comfortable diving into building your own application with Electron, and excited about the potential it brings to the table.



At EmberConf 2016, Felix Rieseberg shows us how to integrate Ember with Electron to build ambitious web applications for desktop: netm.ag/ember-290





ABOUT THE AUTHOR TOM KRCHA

w: xd.adobe.com

t: @tomkrcha

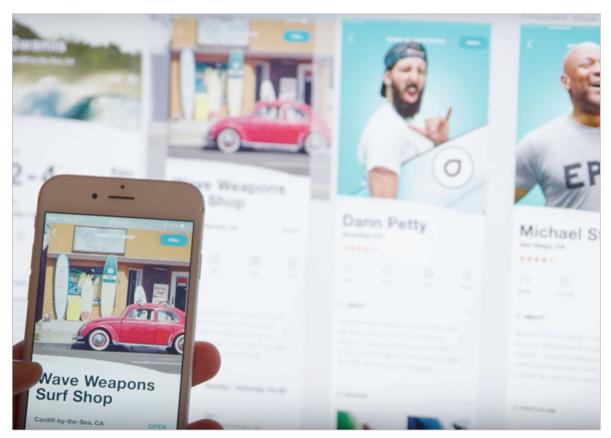
job: Senior product manager, Adobe XD

#### areas of expertise:

Design, development, community engagement

q: what's your biggest fashion faux pas?

a: A fluorescent green sweater



\*ADOBE XD

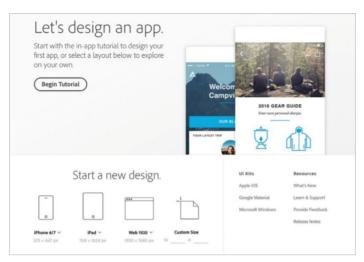
# **EXPLORE THE NEW** FEATURES IN ADOBE XD

Tom Krcha gives you a tour of the exciting new features in Adobe Experience Design CC, including contextual layers and live symbols

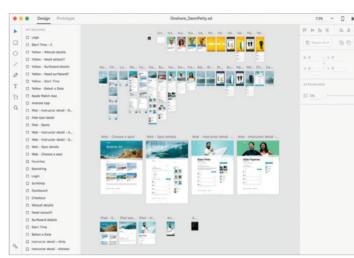
Adobe XD first launched in March 2016 to help designers design, prototype and share their mobile apps and websites in a single workflow. Anyone can share and vote on any changes to the tool (adobexd.uservoice.com), and since March, we've released nine monthly updates that have added more than 50 new features based on user feedback. From the very moment we started working on XD, our goal has been to rethink how even basic features could be reinvented to enable a much faster design process. We call it 'designing at the speed of thought'.

In this tutorial we're going to be building a surfing app based on a concept by Dann Petty, which enables users to investigate and book instructors. Along the way, we will look at how the new Layers panel helps you stay focused on your work, how you can make global changes to your work using symbols, how XD Mobile Preview for iOS and Android enables you to feel designs in your hands, and how you can comment on XD prototypes shared on the web.

Finally, we'll look at few tips and tricks to help you become more proficient when designing in XD. I'll also show you how to make your designs available on mobile devices when you are not necessarily connected to the desktop and want to show your latest design to a client, or do a quick user test.



**Step 1** XD has some built-in tutorials to take you through the process of designing an app



Step 2 Explore the file to see how its multiple screens are linked together

Fire up XD and start a new design or open an existing one. We will use the OnShore App design by Dann Petty – you can download the XD file at netm.ag/ petty-290. You'll see that this design contains a lot of screens – it's very common that your design will grow this large or even much larger.

Explore the file by zooming in and out (hold alt and scroll with your mouse, or pinch on a trackpad) and moving around by holding down the spacebar and dragging. See how the screens are wired in the Prototype mode. You can run the prototype by hitting the Play button in the top-right corner.

Open the Layers panel by clicking the icon in the bottom-left of the toolbar. As you can see, your file can easily have 50-100 artboards, especially if you want to show many variations. Each artboard can include 50-100 layers/ objects, resulting in thousands of layers to be displayed in a standard Layers panel. Users told us that working with so many layers can become really time consuming and make it feel like you're spending more time managing your file than designing.

So what's different about the new Layers panel? Just like everything in XD, the Layers panel is contextual. It focuses your attention on the content you are currently working with. Staying focused on the work is key to making quick progress.

Click on the pasteboard (the grey area around the artboards that you can use to hold work in progress). The Layers panel will show a list of all the artboards.

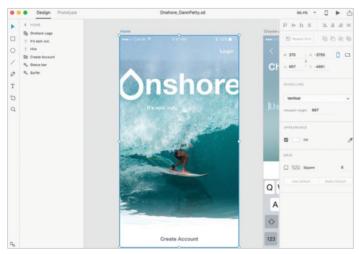
When you double-click the artboard icon next to any of these artboards, the canvas zooms to that artboard, bringing it directly to your attention and making it ready to be worked on. XD shows only layers for the current artboard, to keep you focused on the context you are working with.

Try opening and closing the groups. A darker/filled icon means the group is closed, while an outlined icon means it's open. If you open a group, a mask group, a boolean group (union, subtraction, intersection, exclusion), a repeat grid or a symbol in the Layers panel, it shows all the children layers, but also highlights the area around the group, bringing it to your attention. This is especially handy when you are working with multiple nested groups. It also scrolls the Layers

#### \*EXPERT TIP

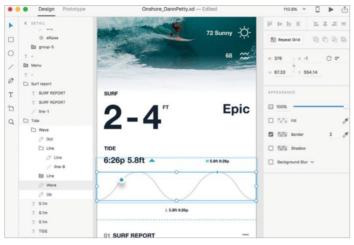
## FOCUS TO AN ARTBOARD

In Adobe XD you can easily focus to an artboard from the Layers panel by double-clicking on it. You can also go to 'View > Zoom to Selection' (cmd+3) with any object(s) selected, and XD will bring that object to the centre of the viewport and zoom to it. Conversely, if you want to see everything that's on the canvas, just go to 'View > Zoom to Fit' (cmd+0).

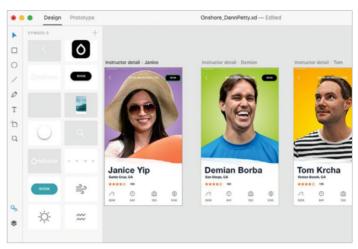


Step 5 Double-clicking the artboard icon zooms the canvas to that artboard



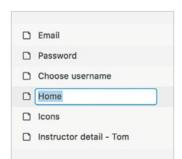


**Step 6** Darker icons mean a group is closed, while an outlined icon indicates an open group



**Step 11** Change the symbol on a button and it will update everywhere in your app

- panel so the current context is in the middle.
  - Double-click the layer name or artboard label to rename it. There is a nuance: If you click outside of the label, you are selecting the layer.
  - To lock and hide a layer from the panel, hover over it and click on one of the icons that appear to the right.
  - Right-click on a layer to export it as a PNG, PDF or SVG file. There are also other standard operations available when you right-click on a layer.
  - As your design grows, you need start thinking about designing at scale. It becomes more and more painful to change the



Step 7 Double-click on the name of a layer or artboard to rename it

style or shape of your UI elements, icons or graphics in multiple places at the same time. That's what symbols are for.

Make a symbol from any selection with 'Object > Make a symbol' (cmd+K) or using the plus button ('+') in the Symbols library (shift+cmd+Y), where you can also find all your symbols.

- Let's try some different variations of the 'BOOK' button. As you change the symbol in one instance, you'll see that it changes everywhere. This means you can see how your symbol fits different contexts in real time.
- Select the background rectangle and change its fill. This way you can try different backgrounds in multiple places in a split second. You can also try resizing the group (everything will resize properly as a button should), or double-click into the group to change the button's label.

The next screen you want to design is for booking, which is a screen that appears after clicking on the 'BOOK' button. Our challenge here is not to lose the context as the user progresses through the flow.

For that you want to overlay the current instructor screen with a dark background, but as you can see in the accompanying image, the overlaying text is still fighting the text in the background.

A very common and modern way to approach this kind of overlay is by using a feature called Background Blur. Background Blur can be applied to any shape or even a text, and it basically blurs everything that is beneath it.

Select the background rectangle and check Background Blur in the Appearance pane. Tweak the settings to reach your desired results. The settings are Blur Amount, Brightness (from dark to light) and Opacity.

- Select the text field that includes the days (Today, Tomorrow, Friday, Saturday ...) and turn the Background Blur on.
- When designing on desktop, the pixel density is different, which affects the physical size of your design on mobile devices. Because pixels are denser on mobile devices than on your desktop or laptop display, the physical size of any UI elements you draw at a given pixel size will be smaller on your phone than they appear on your desktop.

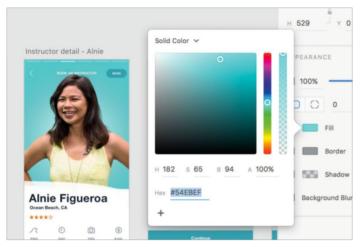
For instance, you need to make sure the button you have just designed will be big enough for a finger to hit, check the font size is readable, and test that the colours pop properly when you are looking at your phone on a sunny day.

Testing on a device is invaluable if you are serious about mobile app design. With Adobe XD, you can do all this quickly

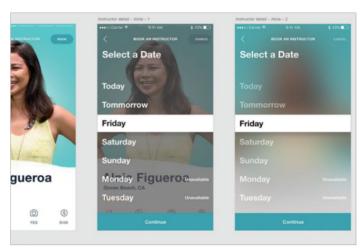
\*EXPERT TIP

## **RESIZABLE BUTTONS**

In Adobe XD, you can easily make a resizable button with a label. Create a rounded rectangle, draw an area text object with the Text tool by clicking and dragging from one side to another, and group them together.



Step 12 Changing the fill of a background rectangle means you can quickly try out new looks



Step 13 Retain context as the user moves through the app by using Background Blur

and easily using the XD mobile app. Download and run Adobe XD for iOS from the App Store or Adobe XD for Android from Google Play.

Plug a USB cable from your computer into your device. Select an artboard on desktop, and it will appear on the mobile device. Next, move any object on the current artboard to see it changing in real time on the device. Try making other modifications, such as changing a colour.

If you need to skip to a specific artboard in your design on your mobile device, just long-press and tap on 'Browse

artboards'. This will show you a list of all the artboards in the current document and you can quickly jump to the one you want.

We are always learning and improving our designs. The feedback we get from stakeholders plays a significant in role in our next directions. Commenting on the design in the right context makes the whole process faster. In XD, go to 'File > Share Online'. Ensure the 'Allow Comments' checkbox is selected, and choose 'Create Link'.

After your design has been uploaded, open the generated link in a browser and click the comment icon in the corner, then sign in with your Adobe ID. You can then comment on each artboard separately.

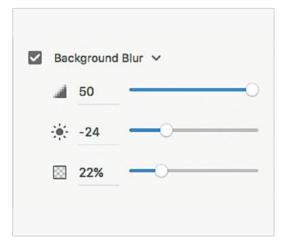
That's it! You've seen how the new features in Adobe XD can streamline your entire workflow, from seeing and working with your document's structure to keeping your design consistent, viewing it on mobile devices, and getting feedback from clients.

Please let us know what you think of the new features and any other features you'd like to see at adobexd.uservoice.com.

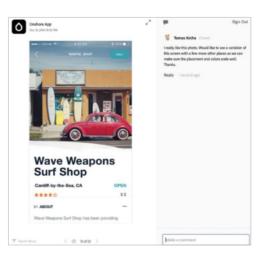
\*EXPERT TIP

## XD ON THE GO

Adobe XD Mobile stores the last design/prototype that you previewed, so you can have it ready in your pocket when you want to show it to a client, a user or a colleague. When you're away from your computer, you can also load any XD files you've stored in your Creative Cloud Files folder.



Step 14 Background Blur blurs the background as you'd expect, but you're given some control over the effect with these sliders



Step 22 The final result. Comments can be added by anyone signed in with an Adobe ID, as long as you've enabled this







# ABOUT THE AUTHOR

w: www.nishanttotla.com

t: @nishanttotla

**job:** Software engineer, Docker

#### areas of expertise:

Container orchestration, distributed systems

### q: What's your biggest fashion faux pas?

**a:** Wearing some extremely tight pants that got torn while stepping out of a car

\* SOFTWARE

# BUILD, SHIP AND RUN APPS WITH DOCKER

**Nishant Totla** introduces Docker, the open-source project that started the container revolution

Let's say there's a web designer called Bob. He's talented and makes highly attractive and detailed websites. He also maintains several public websites. His laptop is configured to use the complex modern web frameworks and other intricate dependencies these websites need, but he has consistently struggled to deploy them to production servers.

For his first few websites, he set up his server machines manually – a painful process that took several hours. If he ever had to make updates to the setup, he'd have to do everything from scratch, every single time.

Then Bob's friend (we'll call her Alice), who's an infrastructure engineer, helped him write some elaborate scripts to automate that. This made life easier for Bob, even though making updates continued to be cumbersome. Scripts frequently broke down because of version mismatches. He also tried configuration management tools that would do the server setup for him, but it was still beyond Bob's skillset or interests to deal with this. It was particularly challenging when he decided to move his websites to new server machines.

This is a situation many developers have faced. They know exactly how to write and run their apps, but don't have the expertise to manage the path from development to production.

#### **INTRODUCING DOCKER**

Imagine if Bob could just once define how to build his application on his laptop (he's good at that), and package it all nicely inside a 'box' that could be sent to his server? There would be no server configuration or complex scripts needed, even if the dependencies or environment changed. If he wanted to update his site, he could just update the contents of the box. This is exactly what Docker is designed to do: it's an open-source project that automates the deployment of software applications inside containers ('boxes').

Deploying software is a trade-off between portability and overhead. Less portable methods (manual setup or scripting) are very lightweight with little overhead, but harder to manage. At the other end of the spectrum, virtual machines are extremely portable and provide full isolation from the host, but at the significant overhead of virtualising hardware for a guest operating system to use. Virtual machines are slower to start, stop and move around.

Docker containers are a compelling sweet-spot; by leveraging the low-level mechanics of the host operating system, containers provide most of the isolation of virtual machines at a fraction of the computing power. The bottom line is this: as long as you can package your application inside a Docker container, then it can run just like that on any machine that has Docker installed.

#### **HOW TO GET DOCKER**

As an example, let's build a static site served by an nginx server, all running inside a Docker container. First, install Docker from *netm.ag/install-290*. This installs a Docker daemon (a background process that constantly monitors and manages containers), and a Docker client (a command line tool used to talk to the daemon).



To understand the vast number of possibilities and options available with Docker, you can start with the official documentation: docs.docker.com Before moving on, let's get some terminology out of the wav:

- Docker container: A sandboxed environment that runs on the kernel. Applications running on Docker essentially run inside containers that are managed by the daemon
- Docker image: A saved state of a container. Images can be sent to other machines and started there, and they will run identically
- Docker Hub: A registry of public and private images (including several official images that contain popular software)
- Dockerfile: A text file that contains specific instructions for building images. This is a reproducible way in which developers can indicate exactly how to build their software

#### **LET'S WRITE A DOCKERFILE**

Create a directory called DockerStaticSite with an index.html file inside it that says 'Hello World'. This is the site we'll run using Docker. Nginx is quite versatile, but one of the simplest use cases is a web server serving static HTML files.

## **Docker automates** the deployment of software applications inside 'boxes'

We'll run nginx inside a Docker container, copy our index.html file into it and tell the container to expose our website on port 8080. You can have an additional nginx configuration file, which is optional. Our reference repo contains a default.conf file (netm.ag/docker-290).

Let's create the image that defines how this container should run. As mentioned earlier, we write a Dockerfile to create an image.

FROM nginx:alpine

COPY default.conf /etc/nginx/conf.d/default.conf COPY index.html /usr/share/nginx/html/index.html

Docker images are built as layers of functionality. Starting from a base layer (FROM nginx:alpine), we add more description on top to construct an image that accomplishes what we want.

In this case, nginx:alpine is a public image that conveniently exists on Docker Hub, and we will use it as our base. alpine is a tag for the image, which represents a version of the image built for Alpine Linux (there can be multiple versions, each represented by a tag). The next two lines copy the default.conf and index.html files into the /etc/nginx/ conf.d/ and /usr/share/nginx/html/ paths respectively, inside the nginx image.

To build this image, use the build subcommand of the Docker command line client. Run the following command from inside the DockerStaticSite directory:

docker build -t <docker-hub-username>/staticsite:1.0

And voilà! Version 1.0 of our image is ready. The -t flag adds a repository ( <docker-hub-username>/ staticsite) and tag (1.0) to the image. The tag is optional, but it allows the image to be pushed to Docker Hub, where it can be stored and pulled from a different machine. You can check the image was created by typing docker images.

You'll notice that we see both the image we created and nginx:alpine, which was downloaded in order to serve as the base for our image. So far, so good. Now let's run our image using the run subcommand:

docker run --name mycontainer --publish 8080:80 <docker-hub-username>/staticsite:1.0

That's it! Go to http://localhost:8080 on your laptop to see the website up and running. This image is also ready to run on any other machine. Try it.

Nginx (by default) exposes on port 80, but it is inside the container, so we need to tell Docker to 'publish' the internal port to a port on the host machine (8080 in this case), so the browser can access it. That's what --publish 8080:80 does.

You can see that the container is also running using the ps subcommand in a separate terminal window. Also note that the requests you send to the browser will show up in the terminal in which you typed docker run.

#### WHAT NEXT?

Hopefully this has given you an introduction to the power of Docker. The Docker ecosystem has grown tremendously over the last three years, both in terms of tools and the community. The true power of Docker shows when teams deploy multiple containers in a distributed environment. Applications can now easily be broken down into small and maintainable functional units. The possibilities are endless.

Next time you start a software project, try using Docker to build and ship it. It will significantly simplify your infrastructure, and make shipping software much faster.







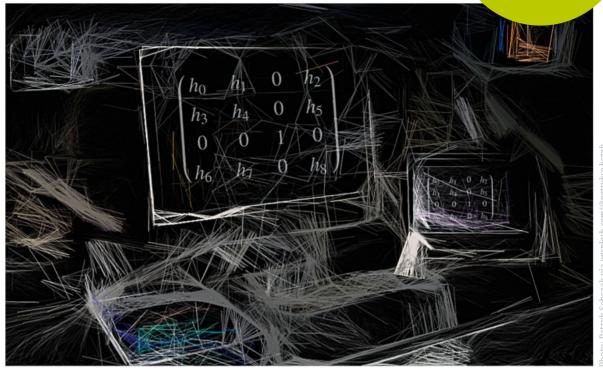
#### ABOUT THE AUTHOR MARCO SORS

w: www.web-expert.it t: @MarcoSors job: Frontend developer

areas of expertise:

q: what's your biggest fashion faux pas?

a: Trying to do a fashion haircut alone, I made a triangular hole in the back of my head by mistake



# **CREATE A 3D SCENE USING MATRIX3D**

It's time to add the third dimension to the web. **Marco Sors** shows you to transform DOM elements with the matrix3d CSS property

Are you bored of visiting, designing and developing two-dimensional web pages? Do you think it's time to start experimenting with three-dimensional transformations? Then you're reading the right article. In this tutorial I will show you how to create scenes with interactive elements positioned in three dimensions using the matrix3D() CSS property. The aim is to offer those who interact with your page the impression of depth typical of the real world.

#### **GETTING STARTED**

To start with, we need the 'set'; a background image suitable for hosting the objects we are going to add. For this, I chose a picture by Patryk Sobczak I found on Unsplash (unsplash.com/@patryksobczak).

We need to identify the elements we're going to add to our scene. I have opted for a net magazine cover, a beautiful calendar designed by bilmaw (netm.aq/calendar-290) and finally two web pages: the Matrix Wikipedia page and a cute CodePen on the same theme. We'll include the web pages as iframes on the two blank monitors.

Now let's create some basic markup for the scene. To keep things simple in this tutorial, I've only included the code needed for the cover of net magazine - you will find the full version on CodePen (netm.aq/CSSpen-290).

<div class="wrapper">

<div class="scene">

<img class="scene\_\_img" src="img/bg.jpeg" />

RESOURCE

Zoltan Hawryluk has written an interesting article on how to augment photos with matrix3d. In it, you will find some smart demos and clear explanations: netm.ag/zoltan-290



**Set the scene** To start with, choose your set – this will form the background

<div class="cover"></div>	
<img class="" src="img/c&lt;/td&gt;&lt;td&gt;over.jpg"/>	

We then need to define the styles of the container. At this point, we'll add some properties that will be useful later:

.scene {
position: absolute;
-webkit-transform-origin: 0 0;
transform-origin: 0 0;
overflow: hidden;
}

## matrix3D() can help create the impression of depth typical of the real world

At this point we need to add a call to jQuery version 1.12.\* or 2.2.\* before closing the body:

<script src="https://code.jquery.com/jquery-</pre> 2.2.4.min.js" integrity="sha256-BbhdlvQf/ xTY9gja0Dq3HiwQF8LaCRTXxZKRutelT44=" crossorigin="anonymous"></script>

#### THE KEY STEPS

For each item we're intending to position in three dimensions, we have to follow this procedure. Let's add a class to the div that contains the item to be processed. In this case I will call it .cover . In the CSS we attribute the following properties:



★ FOCUS ON

# ENTERING THE MATRIX

'Matrix' is a mathematical word for a rectangular array of numbers, symbols or expressions. Matrices have many different applications in science and maths – for example in the computer graphics field they're used for linear transformations and projecting 3D images onto a 2D screen.

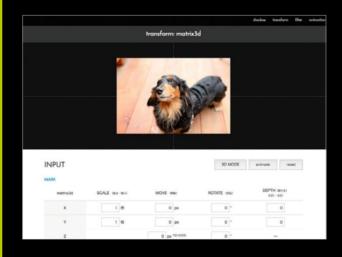
That's exactly what the matrix functions do: matrix() allows us to create linear transformations in 2D, while matrix3d() lets us create the illusion of three dimensions in two dimensions using CSS. In this way we can rotate, scale, skew and flip objects along the X, Y and Z axes at the same time, thus giving the viewer the perception of 3D space.

A simple example of matrix3d scale transformation is shown below. As you can see, it's an array composed of 16 values:

transform: matrix3d(.8, 0, 0, 0, 0, .5, 0, 0, 0, 0, 1, 0, 0, 0, 0, 1);

A must-read if you want to better understand matrix3d is Franklin Ta's article netm.ag/matrix-289. If you are mathematically challenged it will be quite hard to follow in some places, but it will give you a full overview about the theme. In this tutorial we're using a smart script developed by Ta.

If you want a playground where you can test out matrix3d, go to netm.ag/generator-289. You'll find a generator where you can insert values to scale, move, rotate or add depth to an element using its X,Y and Z axes. At the top of the screen you'll see the preview, and at the bottom is the generated CSS matrix3d() values.





★ IN-DEPTH

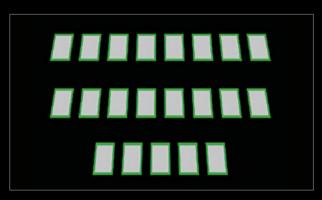
# THE QUICK ALTERNATIVE: **PERSPECTIVE**

If you need to put a series of elements on the same tridimensional plane, you can use the perspective CSS property. This property gives an element a 3D effect by changing the distance between the Z axis and the viewer.

.element { perspective: 100px;

The power of the effect is dictated by the value. If you use a small number, the vanishing point will be further away and the visual effect will be stronger. If you use a large number, the vanishing point will be closer to the viewer and the effect will be softer.

The perspective property doesn't involve directly how the element is rendered, but creates a three-dimensional space for its child elements. You can find a nice explanation in this article by David DeSandro: netm.ag/desandro-289.





	position: absolute;
-	z-index: 100;
_	•
	width: 600px;
	height: 784px;
	top: 40px;
	left: 40px;
	overflow: visible;

Note that the dimensions in pixels of the container relate to the proportions of the image.

Now grab the smart DragTransform script written by Franklin Ta: netm.ag/ta-289. Save it, then open it in our editor. The highlights are in line 4, where we indicate the selector for the element we want to make transformable:

var selector = '.cover'

And then line 97, where you define the style of the 'handles' that allow us to turn the element using drag-and-drop in the browser. I've changed the colour from black to lime green to make the points more visible.

border: '5px solid lime', borderRadius: '5px', cursor: 'move',

Copy and paste the script in the browser console, and execute it. You should get this message log:

Object {readyState: 1}

If you look at the web page, you'll see four lime points have appeared on the corners of our element. At this point we can drag each of them with the mouse, turning the cover in three dimensions.



Positioning elements After executing the script in the console, drag the

When we have moved the item to our desired location and created the right perspective, it's time to inspect the CSS styles of the element with developer tools. We should see a transform property (matrix3d()) with 16 values.

Mine looks like this:

transform: matrix3d(0.628452, 0.0396426, 0, 0.000160774, 0.050605, -0.0886537, 0, -0.000397963, 0, 0, 1, 0, 283, 849, 0, 1);

Copy this property and add it to the .cover styles. Then add the following properties - there are useful because they help us avoid flickering and strange behaviour by the transformed element.

transform-style: preserve-3d; transform-origin: 0 0 0; backface-visibility: hidden; perspective: 0;

Now we have an element positioned in three dimensions on our page! In my example I've added

## The last interesting step is to make the entire page fluid on browser resize

a second cover hidden underneath the first, which will move down on hover using CSS transition.

You can repeat this process for all the elements you want to add to the page, as I have done for the calendar and the two iframes.

#### **GOING RESPONSIVE**

The last interesting step is to make the entire page fluid (100% width) on browser resize. We can achieve this with the following script:

#### (function() { /\* Scene responsiveness \*/ var body = docElem = window.document.documentElement, wrapper = document.getElementById( 'wrapper' ), scene = wrapper.querySelector('.scene'), sceneWidth = scene.offsetWidth; scalescene(); function scalescene() { var wrapperWidth = wrapper.offsetWidth, val = wrapperWidth / sceneWidth;



### scene.style.transform = 'scale3d(' + val + ', ' + val + ', 1)': window.addEventListener('resize', resizeHandler); function resizeHandler() { function delayed() { resize(); resizeTimeout = null: if ( typeof resizeTimeout != 'undefined' ) { clearTimeout( resizeTimeout ); resizeTimeout = setTimeout( delayed, 50 ); function resize() { scalescene(); })();

The browser support for 3D transformations is now wide, as you can see in Can I use table: caniuse. com/#feat=transforms3d. Add -webkit prefix in case you want to support particularly old versions of WebKit browsers.

#### **WRAPPING UP**

As you have seen, the process is a bit laborious, but surely not difficult. Now you can prepare your threedimensional scenes following your imagination, and place any kind of elements: images, carousels, videos, canvas, SVG ... Have fun! **n** 

#### Creating a scene

The complete scene with all the elements threedimensionally positioned



14 speakers, two tracks, one amazing day

**TICKETS ON SALE NOW** 

www.generateconf.com



\* STANDARDS

# **HOUDINI**

Sam Richard takes a look at the new tricks Houdini has up its sleeve

> The CSS-TAG Houdini Task Force (or CSS Houdini for short) had a big 2016. With partial implementations or intents for many features in Chrome and a couple of in-development features in Firefox, now is a great time to start looking at what will become one of the most powerful features in our web development toolbelt.

> Currently there is a lot of 'magic' the browser uses to get a page to render: calculating layout, building the CSS Object Model, animating the page on scroll. With Houdini, many of these underlying style and layout primitives will be exposed, to allow us to use them and build on top of them. Think of it like making the render engine scriptable, similar to what Service Workers allow us to do with the cache.

There are three main features with some partial implementation now: the Typed CSS Object Model, the Painting API, and the Animation API.

#### THREE FEATURES

The Typed CSS Object Model (Typed OM for short) is an evolution of the current CSSOM that gets built while a page is rendering. Currently, all CSS Values retrieved via JavaScript are strings, and transforming their value from a string to something useful is a lot of work. The Typed OM makes their parsed, typed values available as subclasses of the new CSSStyleValue, enabling easier and more performant retrieval and manipulation.

The Typed OM introduces element.styleMap and getComputedStyle(element), both with a get parameter, to fetch the typed value of a CSS property. With something like background-position: center bottom 10px, calling getComputedStyle(element). get('background-position').x will return 50% as a CSSSimpleLength . Swap in y and it will return calc(100% - 10px) as a CSSCalcLength.

The Painting and Layout API both introduce a new concept: the worklet. Similar to a Web Worker, worklets run on a separate thread so they don't block, but only have access to the specific web APIs needed for their respective functionality. Both have you register a new class (paint, animator) and a name that can be used later.

The Painting API exposes a drawing context similar to Canvas that can be used wherever images in CSS are. They can be written to scale based on the element's size (even if it's resized), and can be styled with CSS Custom Properties, making them very flexible. After registering a paint - say a circle - it can be used by passing its name into the paint function. --circle-color: red; background-image: paint(circle) will use the circle paint and, presuming it uses --circle-color to determine its colour, will be red.

The Animation API allows input to be taken in from the user and responds with output. It's mainly used for doing things like parallax or resize effects tied to a user's scroll position. Currently these are very bad for performance, as they block the main thread and are likely to produce lots of jank.

With the Animation API, an animation can listen to the scroll event off the main thread, do the CSS calculations needed there as well, and return to the render engine the properties that need to be updated. This will make these kinds of effects super performant, with no more blocking!

#### IS HOUDINI READY YET?

Surma (www.ishoudinireadyyet.com) gives a fairly up-to-date picture of the features Houdini is looking to bring out, with a high-level overview of the specs and their implementation across various browsers. Some of Houdini's functionality works quite well in Canary, and there's even a couple of polyfills available with some sample code from Google (netm.aq/sample-290).

Sam (@snugug) is a developer with design tendencies and a love of building open source tools to help with both. He's also interested in content stategy, team processes and cultural transformation





#### ABOUT THE AUTHOR KEVIN LAMPING

w: www.klamp.in

t: @klamping

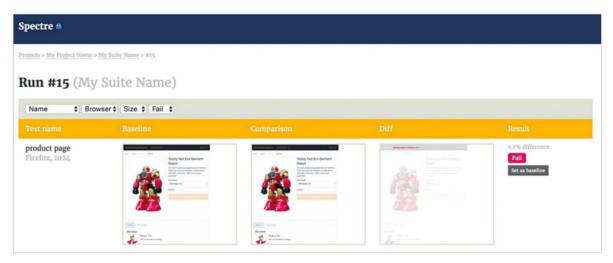
job: Frontend consultant

areas of expertise:

CSS, JavaScript, frontend testing

q: what's your biggest fashion faux pas?

a: If you ask my wife, it's any time I dress the kids



\*TESTING

# **VISUAL REGRESSION TESTING TOOLS**

**Kevin Lamping** runs down the five best visual regression testing tools to get you going in 2017 and beyond

Over the past several years, I've noticed the term 'visual regression testing' cropping up in web development conversations more and more. And for good reason. It promises to provide tremendous value for those who are tired of manually checking their sites for style issues.

With this growing popularity, it seems like every month there's a new tool released, each promising to provide awesome visual regression testing automation. Unfortunately, I've found most to be more dream than reality, the truth being that these types of tests are deceptively complicated.

There are, however, a few that stand out from the crowd. While each has its benefits and drawbacks, I believe every tool in this list is worth a look.

#### **WRAITH**

bbc-news.qithub.io/wraith

Wraith has been around for several years. It was one of the first tools on the scene, and it continues to see enhancements in functionality, with over 200 pull requests closed in its GitHub repo. It's the go-to tool for anyone developing in Ruby.

#### Try it out

From your project directory, run wraith setup. Then run wraith capture configs/config.yaml . This will run a set of tests on two different versions of the BBC homepage. After completing your test run, check out your screenshot gallery by opening the newly created shots/gallery.html page in your browser of choice.

You can also customise your tests. In the configs/ config.yaml file you can update the sites and pages to test, along with setting screen widths and diff mode.

#### Pros and cons

- YAML configuration file is simple to work with
- You can compare two different URLs
- Installation can be tricky if you're not familiar with Ruby
- Running interactions specific to individual pages can be difficult

#### **PHANTOMCSS**

github.com/Huddle/PhantomCSS Another veteran option, PhantomCSS has been a popular choice among frontend developers.



If you're interested in more than just visual regression testing, you can up your testing game by adding automated functional testing with webdriver.io Its familiarity and functionality make PhantomCSS a great choice for frontend folks looking to stretch their legs in terms of website testing. Built on top of PhantomIS/CasperIS, PhantomCSS adds to the fantastic functionality provided by those two tools.

#### Trv it out

Create a new JavaScript file with the following code:

casper.start('http://the-internet.herokuapp.com/checkboxes') .then(function(){ phantomcss.screenshot('#checkboxes', 'before click'); casper.click('#checkboxes input:first-child'); phantomcss.screenshot('#checkboxes', 'after click'); });

Then run your file via the CapserJS CLI: casperjs test myfile.js. Your script will run in the background and your images will be saved to the screenshots folder.

#### Pros and cons

- Many tutorials and presentations on it
- Built on top of CasperJS, allowing integration of page actions into tests
- Tests limited to PhantomJS
- No interface for reviewing/managing screenshots

### These tools provide tremendous value for those tired of manually checking for style issues

#### **GEMINI**

gemini-testing.github.io

I find Gemini appealing because it packages traditional Selenium testing in an interface that isn't too complicated. As with PhantomCSS, you can define custom actions around your screengrabs. Unlike PhantomCSS, Gemini goes several steps further by providing 'test suites' that can help organise your code.

#### Try it out

Create a .gemini.yml file with the following contents (replacing the URL to your Selenium grid server):

rootUrl: http://the-internet.herokuapp.com/checkboxes gridUrl: http://localhost:4444/wd/hub browsers: chrome: desiredCapabilities: browserName: chrome

★ IN-DEPTH

# WHAT YOUR TESTS RUN ON

Visual regression testing requires access to a browser's rendering engine, allowing the test to 'see' the website. Which rendering engine it uses depends on the tool you use and how you configure it. There are several options available and it's good to know about each one.

#### PhantomJS and SlimerJS

PhantomJS and SlimerJS are 'headless' browsers (hence the name), meaning that they don't have a visual UI to interact with. Instead of using a mouse or keyboard to interact with the browser, they provide a JavaScript API that you write scripts for. The benefit of this is that they are much faster than a normal browser, yet still provide an environment that's close to the real thing.

#### Selenium

For browser testing, there's nothing better than the real thing. Selenium provides this by offering control over actual browsers. Everything from IE8 to Mobile Safari is available through Selenium, making it a powerful option in the testing world.

The power comes at a price though: Selenium tests are notoriously slow, and a large test suite can easily take over 15 minutes to run. If you're writing tests in Selenium, don't expect to run them on every little code change. These tests are best saved for the code review and deployment process.

For Node.js users, I highly recommend the Selenium Standalone package (netm.ag/standalone-290) for getting a server running on your computer. I've used it again and again with success.



Tool inventory The browser you're testing depends directly on the tool (and settings) you use



★ FOCUS ON

# **VISUAL TESTING AS A SERVICE**

The tools in this article focus on open source options, as they're free and open to contributions. That said, if you don't want to spend too much time configuring test logic and setting up Selenium servers, a paid service may be a better option for you

The following services all provide visual testing as a service. Most offer free plans, so you can get started with them before choosing to commit fully.

#### **Applitools Eyes**

www.applitools.com

Applitools integrates into your Selenium test suite, allowing you to save full-page screenshots to its service. From there, you can check screenshots using several different comparison modes.

#### BackTrac

www.backtrac.io

BackTrac is built around the approach of comparing your testing or staging site with production, to ensure there are no unwanted differences between the two

#### **Ghost Inspector**

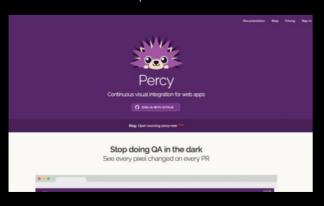
www.ghostinspector.com

Offering a solution that requires no coding, Ghost Inspector creates tests through a Chrome extension. This allows you to take actions on the page before and after screen captures.

#### Percy

www.percv.jo

Percy offers full integration with your development process, hooking into services like Github and continuous integration tools such as Travis CI and Codeship.



Then create a test file, and put it into the gemini folder in the root of your project. The file can be as simple as:

gemini.suite('yandex-search', function (suite) { suite.setUrl('/checkboxes') .setCaptureElements('#checkboxes') .capture('before click') .capture('after click', function(actions, find) { actions.click('#checkboxes input:first-child'); }); });

Next, create your baseline images by running gemini update. You should see one test passed. You can run a regression test via gemini test, which will compare the new images with the ones stored inside the gemini/screens directory.

#### Pros and cons

- Selenium integration allows you to test on a wide variety of browsers and devices
- Well-documented site with various examples
- Provides a framework for sorting tests into suites
- No direct access to Selenium, limiting the type of actions you can take on a page
- Running the same test on multiple resolutions requires advanced configuration

## The tool you choose depends if you're testing a simple site, or need to mimic user actions

#### WEBDRIVERCSS

github.com/webdriverio/webdrivercss First, a caveat: the future of WebdriverCSS is uncertain, as there are efforts to replace it with a more up-to-date module. That said, I think it's still worth mentioning, as the same basic structure will carry on to the next implementation.

Like Gemini, WebdriverCSS hooks into Selenium for its functionality. It also sits on top of another tool: WebdriverIO. Because it is part of the WebdriverIO ecosystem, it benefits from everything that framework has to provide. This includes hundreds of commands you can send to the browser, before and after taking screenshots.

WebdriverCSS also integrates well with test frameworks like Mocha, Jasmine and Cucumber.js. Add in connectivity with cloud Selenium services like Sauce Labs and Browserstack and you've got a fullfeatured functional test suite with visual regression testing as the cherry on the top.

#### Trv it out

Create a new JavaScript file (test.js) in your project with the following content:

var client = require('webdriverio').remote({desiredCapabilities: {browserName: 'chrome'}})

require('webdrivercss').init(client, { screenWidth: [640,1024]

var screenshotElement = [{ name: 'checkboxes', elem: '#checkboxes' }1:

#### client.init()

.url('http://the-internet.herokuapp.com/checkboxes') .webdrivercss('before-click', screenshotElement) .click('#checkboxes input:first-child') .webdrivercss('after-click', screenshotElement) .end();

Run the test by typing this command into your command line:

\$ node test.js

Validate the images that were created by checking the webdrivercss folder. If you run your test again and the screenshots change, you'll notice a diff folder will be added and the respective diff images will be inside of it.

#### Pros and cons

- Since it uses WebdriverIO, you can take advantage of all the features that framework provides
- Ouick configuration of different screen resolutions
- Enables you to hide/mask certain areas of the screenshot
- Future uncertain as this specific plugin is no longer officially maintained
- Requires you to learn how to use WebdriverIO

#### **SPECTRE**

github.com/wearefriday/spectre

Unlike the other tools on this list, Spectre doesn't run tests. Instead, it focuses on providing image comparison capabilities, along with an admin interface for managing screenshots.

In normal use, you'd pair Spectre up with a tool like WebdriverIO or PhantomJS. The latter would do the work of capturing the screenshots, while Spectre would manage storing and processing of images. I'm a fan of this, as the separation of concerns makes it easier as a community to have a testing tool of our choice, but also build out a common admin interface.



#### Trv it out

On your Spectre website, open up the path /tests/ new/. From there you can customise the test information and upload an initial screenshot. After submitting your test, go to the main page of your site where you'll see a 'Test Project' created, along with a notification of 1 passed. You can click on any of the links on that page for further details on the test.

Next, go back to the /tests/new page and upload a new image. When completed, return to the main page and you'll see that Spectre ran the comparison and is now reporting a failing test.

#### Pros and cons

- Clean, friendly interface for managing screenshots
- Doesn't try to do too many things, focusing efforts on a specific area of the testing landscape
- Requires knowledge of Ruby server setup
- Requires you to know how to send data/screenshots via a REST API

#### HONOURABLE MENTIONS

There are a few tools that I feel are worth mentioning, even if they didn't get a featured spot in the list above. They are:

- Galen Framework (galenframework.com)
- Shoov (shoov.io)
- BackstopJS (github.com/garris/BackstopJS)

For a comprehensive list of tools and articles on the subject, check out visualregressiontesting.com.

#### WHAT NEXT?

'That list is great, but can't you just tell me which tool to use?' I hear you ask. Well ... no, because it greatly depends on what you're testing. If you're checking a fairly simple site, Wraith or Gemini are great options. But if you need to mimic user actions, then WebdriverCSS or PhantomCSS would be a better fit. If you're unsure, don't worry. Just pick one and try it out. No matter which tool you choose, you'll learn valuable lessons about frontend testing and just how powerful (albeit complicated) it can be.

Comparison chart A quick chart looking at the major features of five of the most popular visual regression tools out there







#### ABOUT THE AUTHOR 1018 RODRIGUEZ

w: www.uxcodeline.com t: @UXCodel ine

Job: UI and UX designer and developer

#### Areas of expertise:

Service design methods, screenwriting and emerging technologies

#### q: what's your biggest fashion faux pas?

a: Once, seven of us all wore the same outfit to work: black trousers and beige dress shirts. Worst thing, our shirts matched the office wallpaper



\* CHATBOTS

# **HOW TO BUILD A CHATBOT INTERFACE**

Chatbots are the next gold rush – start shovelling! Luis Rodriguez runs through you the tools and techniques you need to build your own

In the mid-2000s virtual agents and customer service chatbots received a lot of adulation, even though they were not very conversational, and under the hood they were merely composed of data exchanges with web servers. Almost a decade later, chatbots are the latest form of artificial intelligence to cause a stir in the tech scene. Even though a huge number of examples of this 'weak AI' [see boxout] exist (including Siri, web search engines, automated translators and facial recognition), with major investment from big companies, there remain plenty of opportunities to hack the future.

As well as being trendy, chatbots can actually be very useful. They don't need to feel like a basic replacement for a standard web form, where the user fills in input fields and waits for validation - they can provide a conversational experience. Essentially we're enhancing the UX to feel more natural, like conversing with an expert or a friend, instead of

web browser point-and-clicks or mobile gestures. The aim is that by providing empathetic, contextual responses, this technology will become embedded directly in people's lives.

What follows is a very practical way to design and build a chatbot, based on a real project-intake application in a service design practice. As this practice serves over 110,000 members globally, the goal was to provide a quick, convenient and natural interface through which internal stakeholders could request effective digital services.

We designed the project intake application so that anyone can make a project request with simple text queries, instead of having to fill out confusing forms in the company's web-based task management software. The chatbot became the initial clientfacing approach, which enabled the team to focus on business goals like lowering operating costs and increasing efficiencies.



Luis Rodriguez has created an exclusive screencast to go with this tutorial. Watch along at netm.ag/ chatbotvid-290



Bot takeover Chatbots are a kind of weak AI, and are causing a stir on the tech scene at the moment

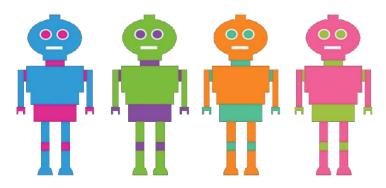
#### **PERSONALITY AND UI**

The first step was to establish the chatbot's personality, as this would represent the voice of the service design team to its stakeholders. We built on Aaron Walter's seminal work on design personas (netm.ag/walter-290). This greatly helped our team develop the bot's personality traits,

### First establish the chatbot's personality - this represents the voice of the company

which then determined the messages for greetings, errors and user feedback.

This is a delicate stage, as it affects how the organisation is perceived. To make sure we had as much information as possible, we immediately set up stakeholder workshops to nail the appropriate personality, colour, typography, imagery and user's flow when engaging with the bot.



Bot personality It's important to ensure the chatbot's particular personality traits reflect that of the company it's representing

★ FOCUS ON

# **WEAK AI VS STRONG AI**

Strong AI (also known as 'a machine with a mind') is a hypothetical artificial intelligence that could perform any intellectual task a human being can. Examples lie in serious scientific research and include the work of Alan Turing, Ben Goertzel, Nils John Nilsson and Monica Anderson. These projects are made up of very deep and complex logic – for example, neural networks. To even attempt to describe them here would be futile, but I highly encourage you to research them.

Weak AI (also known as narrow or applied AI) refers to software that uses AI to solve specific problems or tasks. These are bots in the mainstream that are currently attracting conversation and rising in popularity. Examples include:

#### Weather

These are mostly about users typing in their location and finding out the day's forecast or receiving a daily weather alert.

#### **Grocery shopping**

These basically switch out the UI of food and grocery delivery apps into a chat window and convert user dialogs into grocery orders.

#### News

Provide news or basic information about trending news topics, including digests of breaking stories.

#### Life advice

Mostly replace a specific content or help section or search on a website to provide answers to questions.

#### Personal finance

Perhaps the most groundbreaking chatbot out there. These are more than an assistant for personal data, but include enhanced abilities to perform financial tasks, forecasts and cross-selling of services.

#### Scheduling

An assistant that schedules meetings without the user having to consult their calendar, and keeps everything in sync.



★ IN-DEPTH

# VISUAL STYLE

Aspects of traditional design are very much present in the overall experience of conversational UIs, but they are still based on people's expectations when using a chat application: bot and user avatars, dialog and link bubbles, primary and secondary user input containers and card-based design. When matched with the right UI design, benchmark bots are able to create an elevated perception of value for their product or service.

#### **Colour palette**

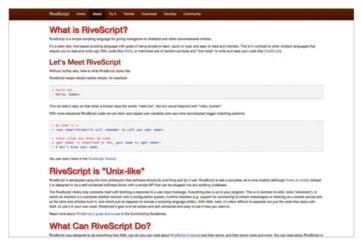
The types of colour used will impact any user's ability to connect with your brand, as well as affecting the usability of the structure and content, and the readability of your bot's responses.

#### **Typefaces**

Never an easy part of the design process, your choice of typeface should be influenced by the voice and tone characteristics you've established. Every typeface has its own mood and personality – whether serious, casual, playful or elegant – and it's important to determine what a particular font says about your chatbot and the organisation it represents.

#### Design

This includes iconography, textures, imagery or any other element that differentiates your chatbot to create a positive and memorable user experience. For example, consider how aspects of your design like icons or avatars look at 32×32 and 64×64 pixels.



**RiveScript** This simple scripting language provides everything you need to design and build a chatbot POC, including the ability to communicate with external systems



**Basic UI** A basic grunt server with RiveScript chatbot embedded in a web page, featuring a fully customisable open web UI

After we had gained all the necessary approvals - including seeking legal counsel - we set out to convert archaic request forms into a series of backand-forth questions that mimicked a conversation between the stakeholders and a representative of our design services team.

#### RIVESCRIPT

We knew we didn't want to get too deep into AI markup language (netm.ag/alice-290) for the processing part – we just needed enough to jump-start the experience. RiveScript is a simple chatbot API that is easy enough to learn and sufficed for our needs. Within a few days we had the logic down to intake a project request from the bot, and parse it with enough business logic to validate and categorise it so it could be sent it through JSON REST services to the appropriate internal project tasking queue.

To get this basic chatbot working, head to the RiveScript repo (netm.ag/rivescript-290), clone it and install all the standard Node dependencies. Note: In the repo you can also gain a taste of the interactions you can add with the various example snippets. Next, run the web-client folder, which turns the bot into a web page by running a basic Grunt server. At this point we can enhance the experience to suit our needs.

#### **BOT BRAIN**

The next step is to generate the 'brain' of our bot. This is specified in files with the RIVE extension, and thankfully RiveScript already comes with basic interactions out of the box (for example, questions such as 'What is your name?', 'How old are you?' and 'What is your favourite colour?'). When you initiate the web-client app using the proper Node command, the HTML file is instructed to load these RIVE files.

Next we need to generate the part of our chatbot's brain that will deal with project requests. Our main goal is to convert a selection of project tasking intake questions into a regular conversation.

So, for example:

<form action="">

</form>

Hello, how can we help? Great, how soon do we need to start? Can you give me a rough idea of your budget? Tell me more about your project ... How did you hear about us?

A typical accessible web form would look like this:

<fieldset> <legend>Request Type:</legend> <input id="option-one" type="radio" name="request-type" value="option-one"> <label for="option-one">option 1</label><br> <input id="option-two" type="radio" name="request-type" value="option-two"> <label for="option-two">option 2</label><br> <input id="option-three" type="radio" name="request-type" value="option-three"> <label for="option-three">option 3</label><br> </fieldset> <fieldset> <legend>Timeline:</legend> <input id="one-month" type="radio" name="request-timeline" value="one-month"> <label for="one-month">1 month</label><br> <input id="one-three-months" type="radio" name="requesttimeline" value="one-three-months"> <label for="one-month">1-3 months</label><br> <input id="four-plus-months" type="radio" name="requesttimeline" value="four-plus-months"> <label for="four-plus-months">4+ months</label><br> </fieldset> <br> <label for="request-budget">Budget Information</label><br> <textarea id="request-budget" name="request-budget-text" rows="10" cols="30"> </textarea> <label for="request-description">Project Description</ label><br> <textarea id="request-description" name="requestdescription-text" rows="10" cols="30"> </textarea> <label for="request-reference">Reference</label><br> <textarea id="request-reference" name="request-referencetext" rows="10" cols="30"> </textarea> <hr> <input type="submit" value="Submit">

With web forms we're very familiar with certain patterns: you click the 'Submit' button, all form data is sent to another page where the request is processed, and then most likely a cheeky 'Thank you' page pops up. With chatbots, we're able to take the interaction of submitting a request, and make it more meaningful.

#### **DESIGNING A VOICE**

To convert this form to a conversational user interface served in RiveScript's chatbot web client, we need to convert the information architecture from rigid to fluid; or field labels into UI strings.

Let's consider some accessible field labels, and their related question tone:

- Request: How can we help? Not sure? Do you mind if I ask a few questions?
- Timeline: How soon do we need to get started?
- Budget information: Can you give me a rough idea of your budget?
- Project description: OK, can you tell me a summary of the problem to be solved?
- Reference: Also, who referred you to us?

### Our main goal is to convert a selection of required questions into a regular conversation

Next we need to convert the web form's code into AI script, following RiveScript's very learnable processing logic (netm.aq/logic-290) for two-way conversations:

+ *	
% how can we help	
- <set areas="&lt;var">&gt;Sure, Do you mind If I ask a couple</set>	e of
questions?	
+ *	
% sure do you mind if i ask a couple of questions	

- How can we help?

% how soon do i need to start this request

- How soon do I need to start this request?

- <set when=<var>>Can you give me rough idea of your budget?

RESOURCE

Want to leapfrog chatbots and go straight to solving real world technology challenges with artificial intelligence? Then check out leading researcher Monica Anderson's Artificial Intuition site: artificial-intuition.com/ index.html



% can you give me rough idea of your budget

- <set budget=<var>>OK, can you tell me a summary of the problem to be solved, components and environments affected, or an overall description?

% ok can you tell me a summary of the problem to be solved components and environments affected or an overall

- <set project=<var>>Also, who referred you to us?

% also who referred you to us

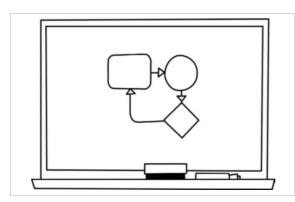
- <set referal=<var>>great here is what I got so far: \n Services needed: <get areas> \n Need to start: <get when> \n Rough budget: <get budget> \n About your project: <get project> \n Referred by: <get referral> \n and will get in touch shortly is there anything else i can help you with today? <call>intake <get areas> <get when> <get budget> <get project> <get referal></call>

### Chatbots can validate information entered by the user in a chat window immediately

#### REQUEST SUBMISSION

As opposed to standard form variables being sent to another page or service to process, chatbots can validate and submit information entered by the user in a chat window (or spoken) immediately, which means users can also revisit previously entered values easily. We needed to send the user's request entered in the chatbot UI via the JSON REST API to an external project tasking server.

In RiveScript-js (netm.ag/macros-290) we are free to make use of an XMLHttpRequest object to submit the



Flow maps A crucial step in the chatbot design process is to convert your input fields into conversation through interaction design flow maps



Standard response The web service receives the data sent through the chatbot UI and returns a standard response

#### request almost simultaneously, as the data is entered by the user:

```
> object intake javascript
var http = new XMLHttpRequest();
 var a = rs.getUservar(rs.currentUser(), "areas");
 var b = rs.getUservar(rs.currentUser(), "when");
 var c = rs.getUservar(rs.currentUser(), "budget");
 var d = rs.getUservar(rs.currentUser(), "project");
 var e = rs.getUservar(rs.currentUser(), "referal");
 var url = "http://localhost:3000/send";
 var params = "areas="+a+"&when="+b+"&budget="+c+"&pro
ject="+d+"&referal="+e;
 console.log(params);
 http.open("POST", url, true);
 http.setRequestHeader("Content-type", "application/x-
www-form-urlencoded");
 http.setRequestHeader("Connection", "close");
 http.onreadystatechange = function() {//Call a function
when the state changes.
   if(http.readyState == 4 && http.status == 200) {
    alert(http.responseText);
 http.send(params);
< object
```

#### **FEAR NOT**

Soon, current ways of interacting with computers to obtain information will give in to AI-based technology like chatbots, where people just make simple voice commands or text queries. The web design community need not fear - we should all be embracing the added value of this new technology. It could be a game-changer for the companies it works for, offering fully scalable customer service and improved customer intelligence.



Add UX thinking to the chatbot design process and discover if a chatbot is right for your team with Aaron Walter's design personas: aarronwalter.com/designpersonas

# **HOUDINI 16 EXCLUSIVE!**

Get your first look at the latest version of the VFX, video games and animation industry's must-use software. We reveal the new features and tools, and how to use them.



**Newsstand for iOS:** www.bit.ly/3dworld-app **Print:** www.myfavouritemagazines.co.uk/3dwsubs

Issue 218 on sale now!





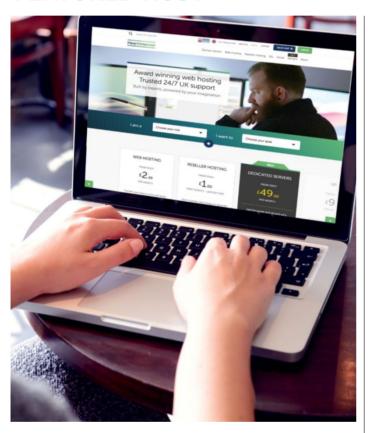




# HOSTING PARTNERS Key hosting directory

★CONTACT US To advertise here, contact our sales team: +44 01225 68 7832 chris.mitchell@futurenet.com

#### FEATURED HOST



"The comprehensive Reseller control panel has helped me push things forward. I don't have to ask; I can just hop in and get it done myself."

Matt Wall, Director, Somewhat Media

#### **\*EXPERT TIP**

## FUTURE GROWTH IS KEY

When you are looking for a web host, always choose a provider that has the ability to grow with you. Your needs today are likely to change, so selecting a provider with the flexibility and scale that can support your growth is key.

# I=leart Internet

As one of the UK's leading web hosting authorities, Heart Internet focuses on designers, developers and technically adept businesses.

It builds on four tenets – speed, reliability, support and security – to create award-winning solutions for over 500,000 customers.

Its high-speed, UK-based network has direct connections to several exchanges and servers with the very latest Intel technology, to ensure fast processing and response times.

Heart Internet's hosting uses cloud-based architecture with built-in redundancy to keep your website up and running no matter what. Its team of friendly and helpful hosting experts is based in the UK and available 24/7, 365 days a year. Plus, its technicians monitor the servers around the clock, utilising the strictest of security methods to keep your data safe.

#### **CONTACT**

0330 660 0255 / SALES@HEARTINTERNET.UK

## WWW.HEARTINTERNET.UK

#### WHAT HEART INTERNET OFFERS

- Web hosting: Fast and secure cloud hosting for small and medium websites
- Premium hosting: Server-level performance without administration – perfect for multi-hosting
- Reseller: Domains, websites, email and much more
   everything you need to support your clients
- Dedicated: High-end servers for mission-critical websites and applications
- Speed and security: Super-fast page load speeds, reliable servers, 24/7 UK support and world-class data security

#### **2020MEDIA**

2020Media is small enough to care, large enough to cope.

Free site migration from any host and 12 months managed WordPress is included with all WordPress hosting plans. The firm is known for its knowledgeable, excellent service to agencies, designers, developers and small businesses across the UK.

0800 035 6364 WWW.2020MEDIA.COM





#### **1&1 INTERNET**

**1&1** Internet is a leading hosting provider enabling businesses, developers and IT professionals to succeed online. It offers a full product range, from domains and website building tools to hosting packages and powerful cloud servers. **1&1** prioritises customer security, including SSL certificates with most products.

+44 (0) 333 336 5509 WWW.1AND1.CO.UK





#### CYBER HOST PRO

Cyber Host Pro has been providing UK web hosting services for over 15 years. It offers super-fast SSD, high-bandwidth web hosting, and is optimised for WordPress. Visit the website to view the website hosting, reseller hosting, cloud and dedicated servers – plus get a 20 per cent discount for life (code: NETMAGLIFE).

0845 527 9345 WWW.CYBERHOSTPRO.COM





#### **CATALYST2**

As one of the UK's most experienced hosting companies, Catalyst2 has built a stable, reliable and well-supported hosting plaform for organisations across the UK. Catalyst2 specialises in very high-availability hosting and exceptional customer support. Contact the team today for a quote.

0800 107 79 79 SALES@CATALYST2.COM





#### **NETCETERA**

Netcetera provides hosting from one of Europe's most energyefficient datacentres. It offers everything from reliable low-cost hosting for single sites through to complex cloud, racks and managed IT solutions. Netcetera has a large portfolio of green, zero-carbon solutions for businesses of all sizes.

0800 808 5450 WWW.NETCETERA.CO.UK





### **ADVERTISE HERE!**

Would you like to promote your hosting business and services to our audience of professional web designers and developers? If so, please call or email Chris as below.

#### **REASONS TO ADVERTISE**

- **Reach professionals:** 75 per cent of readers are working in or seeking work in the web industry
- Variety of projects: Future projects include mobile apps, web apps and CMS-driven sites
- Home workers: 51 per cent have a personal website under development

#### CONTACT

+44 01225 687832 / CHRIS MITCHFIL@FUTURENET.COM





\* ACCESSIBILITY

# MAKING PLANS FOR MOBILE

It's time to make sure your app's on-the-go experience is just as accessible as its desktop one, writes **Seth Holladay** 

'Is your app accessible?' This is a question you will hear at some point, perhaps from a potential customer or a new hire – or even a lawyer. Developers have been working this problem since the early days of computers. But only recently have viable standards and best practices really come into their own. Now suddenly mobile traffic has taken off, exceeding desktop globally for the first time in November 2016, according to web analytics firm StatCounter. Do we have to throw everything out the window and start over?

In principle, most of what you have already done to make your app accessible still applies to mobile. VoiceOver can make use of the tab order even though there is no physical keyboard. Proper page markup, such as using heading tags, will still make it easier to navigate. But the priorities, what works well and what doesn't, are entirely different stories on mobile compared to on a desktop.

In practice, some key mobile accessibility issues include the size of tap targets (padding on anchor tags, for example), having a 'Scroll to Top' link where necessary (netm.ag/top-290), and even using the tel: protocol for phone numbers (netm.ag/tel-290). Each fixes issues caused by small screens, or enhances UX by taking advantage of device capabilities.

There are also new patterns to avoid. Fixed positioning is a mess on mobile (netm.ag/fixed-290); it can cause content to go offscreen where it cannot be scrolled to.

Developers are abusing the <meta> 'viewport' tag to disable zoom, too. Please do not do this! In a survey I performed at Ai Squared, 49 per cent of people reported being unhappy about some sites disabling zoom on mobile. It is rare, outside of games and maps, to need the user-scalable feature of the meta tag. You probably only need width=device-width and maybe initial-scale or minimum-scale. Zoom is crucial for people with low vision, and best left to the user and their device.

Notice that these topics are not as prevalent when discussing desktops, and documents such as WCAG and Section 508 (netm.ag/508-290) have little or nothing to say about them. An app can pass an accessibility checklist and be in compliance with disability laws but still be hard to use. Mobile has widened this divide by introducing new situational challenges (sun glare, vibration and noise on a train) and new technology to misuse (high-DPI screens). By paying special attention to mobile, we can keep users happy and they'll spend more time with us. Then we can proudly say that everyone wins.

PROFILE

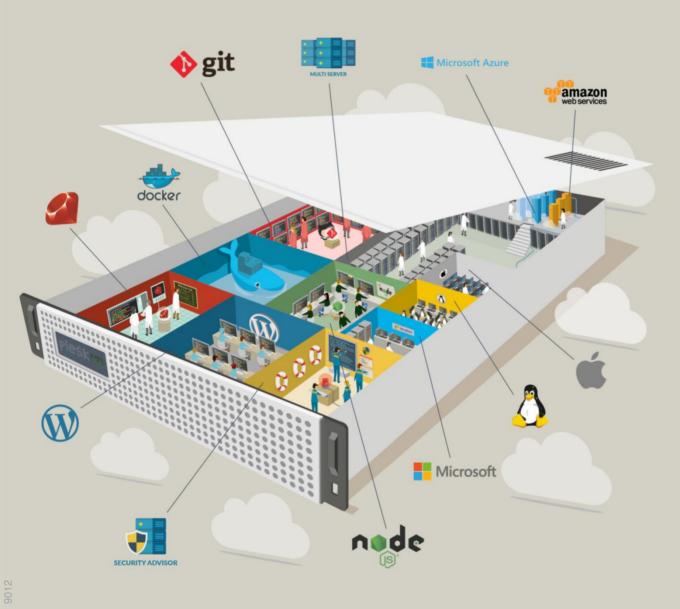
Seth (@SethHolladay) is a full-stack software engineer and entrepreneur working to make the web a simple, happy place through open source (mt)

Media Temple focuses on delivering the world's best performance and support so that creative professionals and enterprises can focus on bold ideas, not web servers.



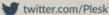
# WHAT'S INSIDE MATTERS

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



Visit plesk.com/netmag







#### \* PROJECTS Build a desktop

app with Electron **Explore Adobe** XD's new features Build, ship and run

apps with Docker Create a 3D scene

with matrix3d Visual regression

testing tools How to build a chatbot interface

