

31 PAGES OF EXPERT TUTORIALS

WEB

FREE 72 MINUTES OF JQUERY VIDS

# designer™

HTML5 CSS3 jQuery WordPress

www.webdesignermag.co.uk

2015  
HTML5  
SKILLS YOU NEED NOW

# THE ART OF WEB FONTS

15 Google DEVELOPER

SECRETS

CUSTOM API CREATION

INSIDE HOW WE CREATED THIS FONT

DESIGN DIARY FRANKENSIM

INTERVIEWS SOME NAMES AND JOB ROLES

ANIMATE YOUR TEXT WITH CSS

HOW TO CHOOSE THE RIGHT TYPE AND WHY IT MATTERS

PROFILE ALL OF US

BUILD VR WEB APPS

ip DigitalEdition GreatDigitalMags.com ISSUE 241



**Reliable UK Hosting**  
from Specialists.

24/7 UK Support • ISO 27001 Certified • Free Migrations

Managed Hosting • Cloud Hosting • Dedicated Servers

**SUPREME HOSTING.**  
**SUPREME SUPPORT.**

[www.CWCS.co.uk](http://www.CWCS.co.uk)

T: 0115 740 1234 • E: [info@cwcs.co.uk](mailto:info@cwcs.co.uk) • W: [www.CWCS.co.uk](http://www.CWCS.co.uk)

# Welcome to the issue

## THE WEB DESIGNER MISSION

“To be the most accessible and inspiring voice for the industry, offering cutting-edge features and techniques vital to building future-proof online content”



Steve Jenkins

## Highlight



“We actively investigate new technologies... which can advance the user experience”

Designing for the physical and digital is what AllofUs are all about. **Web Designer** finds out more. **Page 30**

## Helvetica or Comic Sans? You choose



Choosing the right font is crucial to how a page will be perceived. A simple example lies in the title of this piece. Imagine your latest design with Helvetica as the font of choice. Then imagine your design with Comic Sans as the font of choice. This scenario demonstrates, if a little crudely, how important selecting the right font is. Our latest lead feature takes a close look at the psychology of fonts and how viewers will make decisions about a site simply by the font used. We reveal how fonts are perceived and offer expert advice on how to choose the right one.

Choosing the right HTML5 API for a job is also an important part of any build. The specification has some impressive APIs that add an extra level of interactivity and engagement. Do you know every HTML5 API out there? Do you know which browsers support the API? You will do after reading our feature starting on page 64. It looks at 20 of the best HTML5 APIs, why you need them and how to make good use of them.

APIs are big in the world of Google, but many are hidden away and difficult to find. We dig deep into the world of Google Developer and unveil a collection that will add new levels to your projects. Plus, we have our staple selection of CSS, HTML and JS tutorials to keep you busy. Enjoy the issue.

“The way you set your type... the size, spacing, colour and context - will go a long way to forming a negative or positive experience”

Follow us on Twitter for all the news & conversation @WebDesignerMag

Visit our blog for opinion, freebies & more [www.webdesignermag.co.uk](http://www.webdesignermag.co.uk)



FREE - exclusive with this issue

# 36

## Designer resources

- Video Tuition** - jQuery: 72 Minutes of expert video guides from CartoonSmart
- Assets** - 30 Blurred textures from Louis Richard
- 3 HTML/CSS templates from W3Layouts
- Fonts** - Walken Clean & Kingsbridge Extra Bold from Typodermic fonts



[www.filesilo.co.uk/webdesigner](http://www.filesilo.co.uk/webdesigner)

# This issue's panel of experts

Welcome to that bit of the mag where we learn more about the featured writers and contributors...

☛ Typography does not just convey information. It imparts feeling, emotion and sentiment, and arouses preconceived ideas of content, tone, trust and suitability ☛



**Richard Rutter**

Richard is a self-styled web typography evangelist on a mission to see more expressive type across the web. He is cofounder of **Fontdeck.com** and curator of the Ampersand web typography conference. This issue he reveals how to pick the right fonts and why it matters. **Page 36**

### Ralph Saunders

Ralph is a front-end developer ensuring digital excellence for Redweb and their clients. In this issue he explores the top 20 HTML5 APIs that can be used in contemporary practice, opening up new creative opportunities. **Page 64**



### Tam Hanna

Tam is a veteran in the world of coding and has worked with a host of coding languages. This issue he takes a closer look at the many Google Developer APIs out there and picks 15 you need to add to your creative arsenal. **Page 72**



### Mark Shufflebottom

Mark Shufflebottom is professor of Interaction Design at Sheridan College, Ontario. This issue Mark is creating visual typographic effects using nothing more than CSS3, HTML text and a carefully placed SVG element. **Page 46**



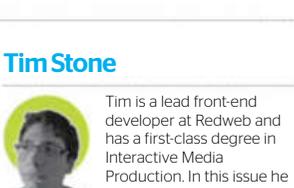
### Matt Gifford

Matt Gifford is a web development consultant and industry author from Cambridge. He has over a decade of industry experience and in his latest tutorial he shows how to create intuitive API schemas with Swagger. **Page 84**



### Sean Tracey

Sean is a creative technologist with the uncanny ability to create projects that spontaneously combust. Not really, and this issue he shows how to deploy web apps, big or small, to the Heroku platform in the cloud. **Page 78**



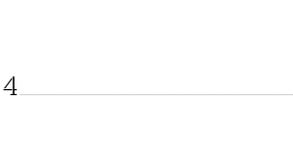
### Mark Billen

Mark is a freelance technology journalist with a background in web design and development. This issue he tackles the Lightbox pages and reveals how to create a host of quick-fire techniques you need to know. **Page 14**



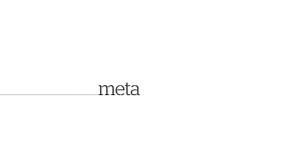
### Leon Brown

Leon is a freelance web developer and trainer who assists web developers in creating efficient and secure code for their web and mobile projects. This issue he shows how to build full-screen navigation for websites and apps. **Page 58**



### Tim Stone

Tim is a lead front-end developer at Redweb and has a first-class degree in Interactive Media Production. In this issue he demonstrates how to create 360-degree virtual reality panoramas for Google Cardboard. **Page 52**



**Got web skills?**  
We're always looking for the hottest web-design talent. Email [webdesigner@imagine-publishing.co.uk](mailto:webdesigner@imagine-publishing.co.uk) with examples of your creative work

Imagine Publishing Ltd  
Richmond House, 33 Richmond Hill  
Bournemouth, Dorset, BH2 6EZ  
☎ +44 (0)1202 586200  
Web: [www.imagine-publishing.co.uk](http://www.imagine-publishing.co.uk)  
[www.webdesignermag.co.uk](http://www.webdesignermag.co.uk)  
[www.greatdigitalmags.com](http://www.greatdigitalmags.com)

### Magazine team

**Editor Steven Jenkins**  
[steve.jenkins@imagine-publishing.co.uk](mailto:steve.jenkins@imagine-publishing.co.uk)  
☎ 01202 586233  
**Senior Designer Benjamin Stanley**  
**Production Editor Carrie Mok**  
**Photographer James Sheppard**  
**Senior Art Editor Will Shum**  
**Editor In Chief Dan Hutchinson**  
**Publishing Director Aaron Asadi**  
**Head of Design Ross Andrews**

### Contributors

Creeshla Doherty, Matt Gifford, Mark Billen, David Howell, Richard Rutter, Sarah Hyndman, Ben Stanley, Mark Shufflebottom, Richard Lamb, Tim Stone, Leon Brown, Ralph Saunders, Tam Hanna, Sean Tracey

### Advertising

Digital or printed media packs are available on request.

**Head of Sales Hang Deretz**  
☎ 01202 586442  
[hang.deretz@imagine-publishing.co.uk](mailto:hang.deretz@imagine-publishing.co.uk)  
**Advertising Manager Alex Carnegie**  
☎ 01202 586430

**Sales Executive Luke Biddiscombe**  
☎ 01202 586431

### FileSilo.co.uk

Assets and resource files for this magazine can be found on this website. Register now to unlock thousands of useful files. **Support** [filesilohelp@imagine-publishing.co.uk](mailto:filesilohelp@imagine-publishing.co.uk)

### International

**Web Designer** is available for licensing. Contact the International department to discuss opportunities.

**Head of International Licensing Cathy Blackman**  
☎ +44 (0) 1202 586401  
[licensing@imagine-publishing.co.uk](mailto:licensing@imagine-publishing.co.uk)

### Subscriptions

[subscriptions@imagine-publishing.co.uk](mailto:subscriptions@imagine-publishing.co.uk)  
To order a subscription to **Web Designer**:  
☎ 0844 848 8413 ☎ +44 1795 592 878  
Email: [webdesigner@servicehelpline.co.uk](mailto:webdesigner@servicehelpline.co.uk)  
13-issue subscription (UK) – £62.30  
13-issue subscription (Europe) – £70  
13-issue subscription (ROW) – £80

### Circulation

**Head of Circulation Darren Pearce**  
☎ 01202 586200

### Production

**Production Director Jane Hawkins**  
☎ 01202 586200

### Finance

**Finance Director Marco Peroni**

### Founder

**Group Managing Director Damian Butt**

### Printing & Distribution

Printed by Southernprint Ltd, 17-21 Factory Road Upton Industrial Estate, Poole, Dorset, BH16 5SN

Distributed in the UK, Eire & the Rest of the World by Marketforce, 5 Churchill Place, Canary Wharf, London E14 5HU  
☎ 0203 787 9060  
[www.marketforce.co.uk](http://www.marketforce.co.uk)

Distributed in Australia by Network Services (a division of Bauer Media Group), Level 21 Civic Tower, 66-68 Goulburn Street, Sydney, New South Wales 2000, Australia,  
☎ +61 2 8667 5288

### Disclaimer

The publisher cannot accept responsibility for any unsolicited material lost or damaged in the post. All text and layout is the copyright of Imagine Publishing Ltd. Nothing in this magazine may be reproduced in whole or part without the written permission of the publisher. All copyrights are recognised and used specifically for the purpose of criticism and review. Although the magazine has endeavoured to ensure all information is correct at time of print, prices and availability may change. This magazine is fully independent and not affiliated in any way with the companies mentioned herein.

If you submit material to Imagine Publishing via post, email, social network or any other means, you automatically grant Imagine Publishing an irrevocable, perpetual, royalty-free license to use the materials across its entire portfolio, in print, online and digital, and to deliver the images to existing and future clients, including but not limited to international licensees for reproduction in international, licensed editions of Imagine products. Any material you submit is sent at your risk and, although every care is taken, neither Imagine Publishing nor its employees, agents or subcontractors shall be liable for the loss or damage.

© Imagine Publishing Ltd 2015  
ISSN 1745-3534



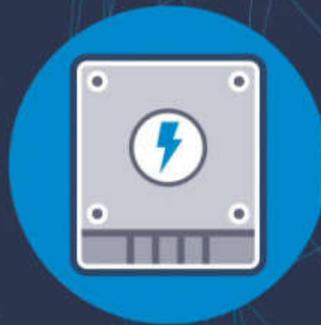


# Cluster

## Our revolutionary NEW Web Hosting platform



**100% guaranteed  
uptime!**



**Smart SSD storage  
& intelligent load  
balancing**



**Dedicated SSL  
certificates**

Web Hosting from:

# £1.99

per month ex VAT charged at 20%

Call **0333 0142 708**

or visit **[fasthosts.co.uk/hosting](https://fasthosts.co.uk/hosting)**

SERVICES • WEB HOSTING • DOMAIN NAMES • EXCHANGE EMAIL



# contents

Cutting-edge features, techniques and inspiration for web creatives

Chat with the team and other readers and discuss the latest tech, trends and techniques. Here's how to stay in touch...

✉ [webdesigner@imagine-publishing.co.uk](mailto:webdesigner@imagine-publishing.co.uk) 🐦 [@WebDesignerMag](https://twitter.com/WebDesignerMag) 📍 [www.webdesignermag.co.uk](http://www.webdesignermag.co.uk)

## Quick look...

- 08 Chrome to finally kill off Flash?**  
It's been a slow and painful process but Google Chrome looks to set in motion the beginning of the end for the infamous plugin
- 10 Webkit: The best must-try resources out there**  
Discover the libraries and frameworks that will make your site a better place to visit
- 12 Maintaining happiness for creative professionals**  
Development consultant Matt Gifford reveals how he keeps his creative passion going
- 14 Lightbox**  
A showcase of inspirational sites and the techniques used to create them
- 26 The making of frankenSim**  
What would Dr. Frankenstein have made with a modern web toolset? Animade's latest project imagines just that
- 30 Connected experiences**  
With design at the epicentre of All of Us **Web Designer** sneaks a peek at how they shape the physical and digital spaces their client's customers inhabit
- 36 The art of web fonts**  
Comic Sans or Helvetica? The psychology behind choosing the right fonts to give the right impression to your audience
- 64 20 HTML5 APIs and tools you need to know now**  
Discover the latest and greatest HTML5 APIs. Find out why you need them as well as how to use them
- 72 Google Developer secrets**  
A must-know collection of the best APIs on offer and what they can do for you
- 90 Hosting listings**  
An extensive list of web hosting companies. Pick the perfect host for your needs
- 98 Next month**  
What's in the next issue of **Web Designer**?

## Cover focus



**30**  
**ProFile: All of Us**  
Shaping digital and physical spaces



**18**  
**Lightbox: I Love This Fame**  
HTML5 game and inspirational message

# FileSilo

94 Get the latest must-have resources and videos

A comprehensive collection of free designer resources!

- 72 Minutes of jQuery video guides
- 3 Web templates from W3Layouts
- 2 Fonts from Typodermic
- 30 Blurred textures from Louis R



64

Discover the best HTML5 APIs and find out what they do and how to use them

Never miss an issue  
**Subscribe**  
Turn to page 62 now  
USA readers turn to page 83 for an exclusive offer

## <header>

The tools and trends to inspire your web projects

### 08 Chrome 45: What's new?

The latest incarnation of Google's browser adds new JavaScript ES2015 features and looks to push Flash out of the picture

### 10 Webkit: The best must-try resources out there

Need a new framework or library? Then this is where you need to start

### 11 Comment: Creeshla Doherty

Webfolio cofounder Creeshla Doherty offers some must-know advice of standing out from the crowd

### 12 Comment: Matt Gifford

Consultant Matt reveals how he keeps his creative passion going



66 A typical web project now uses multiple technologies 99

Matt Gifford

Visit the **WEB DESIGNER** online shop at **imagineshop.co.uk** for back issues, bookazines and DVDs

## <tutorials>

Web gurus take you step-by-step through professional techniques

### 46 Animate text and typography

Give your typography the attention it deserves with these must-try CSS3 animated effects

### 52 Code for Google Cardboard

Bring an immersive virtual reality experience to the browser using three.js

### 58 Build full-screen navigation

Use the full-screen features of CSS and JavaScript to create menu systems for websites and web apps



## web workshop

### 50 Animate an SVG

cameronsworld.net

Re-create the good old days of animated GIFs

### 56 Animate sliding panels

isl.co

Engage your audience with on scroll effects

## web developer

### 72 15 Google Developer secrets

A collection of the search giant's best APIs, why you need them and what they can be used for

### 78 Deploy web apps to Heroku

Set up SSH keys and learn how to deploy to the cloud with command-line Git

### 84 Custom API creation

Improve your API skills with Swagger and generate detailed API schemas with minimal coding and well-crafted documentation

# <header>

## The tools and trends to inspire your web projects

If you have a creative project, new web product or great designer story, contact the editorial desk

[webdesigner@imagine-publishing.co.uk](mailto:webdesigner@imagine-publishing.co.uk) [@WebDesignerMag](https://twitter.com/WebDesignerMag)

# Chrome 45 says goodbye to Flash

The latest version of Google Chrome adds new JavaScript features and looks to kill off Flash for good

Ever heard of Google Chrome? Of course you have, it's the most popular browser on the planet and first choice for billions of consumers and developers. This is why when they update it's always worth taking note.

The latest incarnation of the browser, 45, is no exception, especially as it is looking to finally get rid of Flash ads.

The death of Flash has been touted around for years and while it may no longer be the key component for web animations it still has a big influence. Online ads are the one remaining bastion of the Flash domain. For many it's the only reason that the Adobe plugin needs to be installed at all. There is the view that if you don't install Flash at all then you won't have to look at a load of unwanted ads. The issue is where there is Flash content and no Flash plugin, the user will be continually bothered to install the plugin.

The advent of Chrome 45 is the beginning of the path to Flash's final demise. We know

there are those still holding on, but they just need to let it go.

Chrome started disabling NPAPI plugins (Java, Silverlight) earlier in the year and Flash is now to be partially disabled by default. What does this mean?

The browser will start blocking, or pausing, Flash content that is not central to the page being viewed. 'Important' content will continue playing uninterrupted. Why don't they just dive straight in, stop messing about and pause all content? Or get rid of it altogether? The plugin is a resource-hogger and a security risk, the less of these the better. Surely this is the path that will be taken, so why not force the transition to HTML5 now? It's gonna happen anyway.

Along with Google, Mozilla and Facebook have suggested that it's time to finally finish off Flash. Firefox recently blacklisted Flash in its browser, disabling the plugin by default. For those who still crave and desire Flash content, it can be switched on manually. Facebook's chief security officer (CSO), Alex Stamos, is another figure suggesting it should be gone and HTML5 should be taking over.

This news piece isn't all about Flash, Chrome 45 has a collection of new features and tools that also deserve a mention. New JavaScript ES2015 (previously known as ES6) features are now in 45. Included are arrow functions, new methods on Array and new methods of TypedArray and Object.assign(). For a closer look and further explanation of the updates, make sure you check out this Chromium blogpost at [bit.ly/1j00y5r](http://bit.ly/1j00y5r). For detailed info on the JS features, head over to [bit.ly/107Vg6d](http://bit.ly/107Vg6d).

Finally, we cannot go without mentioning another essential addition that will make the Chrome browser just that little bit faster. Chrome 45 detects if your computer is running low on resources and automatically stops restoring tabs in an effort to save memory. Plus, Google has also trained Chrome to identify when a webpage isn't busy, and use that free time to clean up unused memory. According to the official Chrome blog this reduces memory usage by around ten per cent and is even more effective on web apps.

If you haven't got Chrome 45, get it now.

## Get Web Designer digital editions

Want to build for all screens? Check out our latest digital edition on responsive design

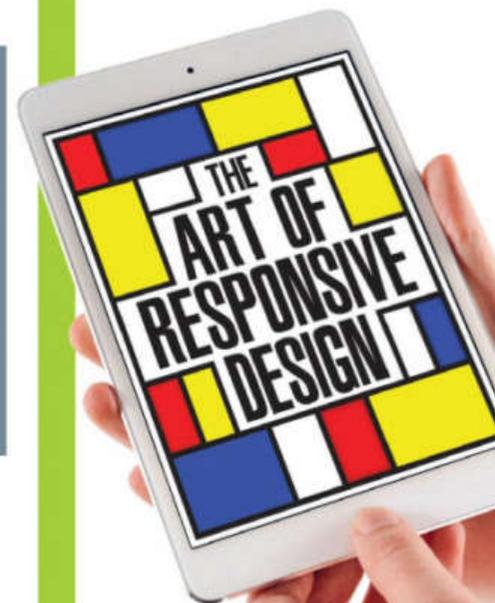
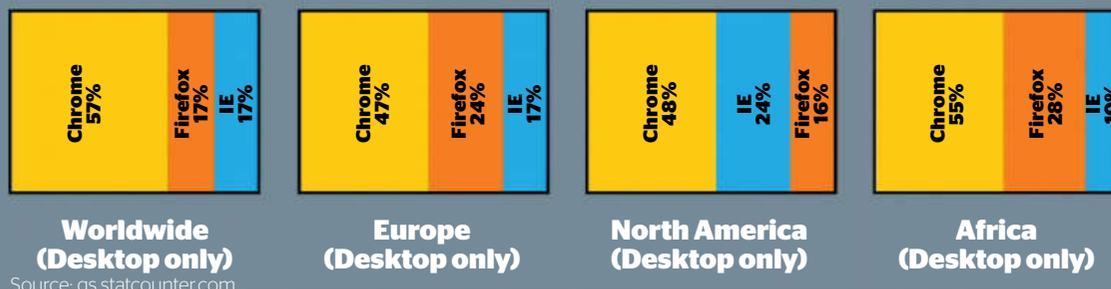
Web Designer's latest digital addition to our collection is **The Art of Responsive Design**. Discover the best practices in the world of RWD and tutorials on typography, email and custom grids.

Don't forget **The Web Apps Handbook** and **10 Amazing Websites and How to Build Them Vol 2**. Get an insight into how to build with HTML, CSS and JS and popular libraries like PhoneGap.

Plus, check out **Web Design Superstars**, **225 Best Web Tools and Resources** and **Amazing Websites and How to Build them Vol 02**. Get your hands on a digital edition by heading to [bit.ly/1hsGYgl](http://bit.ly/1hsGYgl) and download the free **Web Designer** app. They'll be waiting for you as an in-app purchase.

## Exactly how popular is Google Chrome?

We all know the Chrome browser is popular, but how popular is it across the globe?



# <design notes>

A collection of inspirational visuals

## 8 Great Things to do in London

bit.ly/1NOMozk

**1** A video infographic that kicks off with beautiful illustrated animations before revealing more. Make sure you watch the whole video.

**2** The title perfectly sums up the capital of England and the United Kingdom. It has all of the elements and landmarks that are famously associated with the city of London.



## Colour picker

Hot hexadecimal codes

### Code Captains

bit.ly/1VmSqP2



#F7941D #FAD406 #9C2841 #EE3559 #00ACAE

### Color Surf

bit.ly/1jyf6eh



#DCEBED #A4CCD4 #477B80 #E3234 #404133 #B3B69D

## Typesetter

The best fonts you need



### Beloved

bit.ly/1FIOiUg

A font with a romantic spirit that is rendered in ballpoint.



### Nedo

bit.ly/1LjWWsX

Retro-inspired, single-weight display font. Hello Seventies.

## Graphics

Great visuals to inspire



### Projekt Rakija

on.be.net/1LjWZFG

An album cover that uses shadows and angles to create a stunning example of depth. Except it's actually flat, making it even more impressive.

## Themematic

Style up your WordPress



### Aster

aster.themevillage.net

A beautifully conceived theme with a strong emphasis on displaying images and photography at its best by using side-scrolling.

## Sites of the month



### Le Mugs le-mugs.com

Single-page scroller with neat animations



### Jagalee Interactive jagalee.com

On-scroll animation with a purpose



### Panache panache.fr

Transitions to make you go wow



### Suisse Mania suissemania.ch

An interactive WebGL journey through Switzerland

# <webkit>

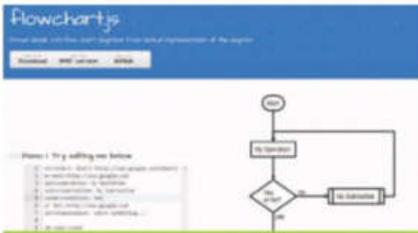
Discover the must-try resources that will make your site a better place



## Juiced

[juicedcss.com](http://juicedcss.com)

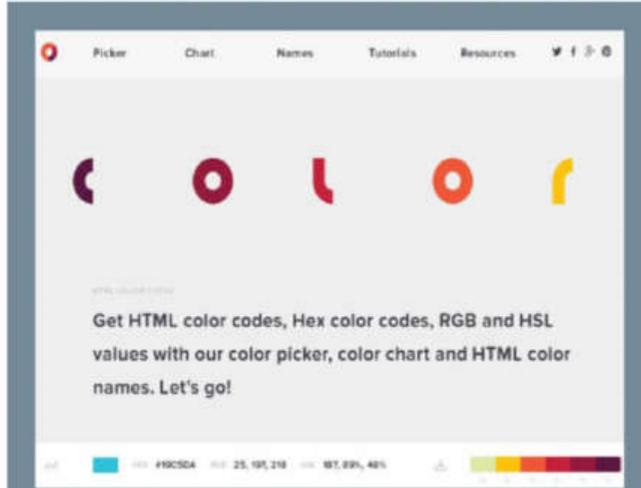
A flexible CSS framework with a host of improvements on current grid-based options. It's built on the flexible boxes layout spec.



## flowchart.js

[adrai.github.io/flowchart.js](http://adrai.github.io/flowchart.js)

Download and start drawing simple SVG flow chart diagrams from textual representation of a diagram. Try working with the live online editor to get started.



## Color Picker

[htmlcolorcodes.com/color-picker/](http://htmlcolorcodes.com/color-picker/)

Colour pickers are hardly a rare breed but finding one that matches what you want and is easy to use isn't always so easy to find. Color Picker is an intuitive tool that enables users to browse millions of palettes and pick a colour from a standard-style palette. They offer up the hex code, RGB, HSL and CMYK. All the user needs to do is hit the download button to get a preview window with the actual palette and all the necessary code, including SCSS. There's more than just the colour picker here: check out different web-safe colour charts, the 140 named colours supported by browsers and a host of tutorials.



## Office UI Fabric

[github.com/OfficeDev/Office-UI-Fabric](https://github.com/OfficeDev/Office-UI-Fabric)

Touted as an alternative to Bootstrap and built by Microsoft. Fabric is a responsive, mobile-first, front-end framework for developers.



## Tabris.js

[tabrisjs.com](http://tabrisjs.com)

This is a mobile framework that lets you develop native iOS and Android apps from a single codebase written entirely in JavaScript.

# TOP 5 Font resources

Need a new font? Here are a few libraries and foundries to check out

# 01

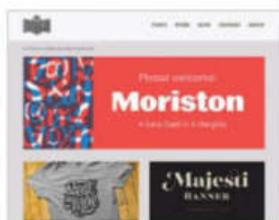


## Type 2

[a2-type.co.uk](http://a2-type.co.uk)

A collection of specially crafted typefaces from a foundry that offers access to a unique selection of fonts created for print, screen and environment.

# 02



## Lost Type

[losttype.com](http://losttype.com)

Pay what you want (for personal use) for individual fonts from specialist independent font designers. Great for contemporary styles.

# 03



## Open Font Library

[fontlibrary.org](http://fontlibrary.org)

On offer is a comprehensive library of 690+ free fonts brought to the masses by over 290 different contributors.

# 04



## Fontdeck

[fontdeck.com](http://fontdeck.com)

Thousands of professionally designed fonts here, enhanced for on-screen use. All fonts are standards-compliant and use a pure CSS @font-face solution.

# 05



## FontSquirrel

[fontquirrel.com](http://fontquirrel.com)

A popular library that offers the best free fonts for commercial use. It has some great tools and updates frequently as well. It's a must-visit.

# STAY AHEAD OF THE GAME

With the number of developers expected to grow by 45 per cent by 2019, how can you stand out from the crowd? Webfolio cofounder Creeshla Doherty offers some must-know advice



**Developers, programmers and software engineers are titles that are often interchangeable, but ultimately they are the backbone of innovation**

**in an increasingly technology-driven world.** The software industry is one of the fastest growing markets, so it isn't surprising that the number of developers continues to grow. A recent study has found that there are 18.2 million software developers worldwide, rising to 26.4 million by 2019 with a 45 per cent increase. Leading the way with the largest number of developers is the US with around 3.6 million. However, due to its growing youthful population, India is set to overtake the US with an estimated 5.2 million developers by 2018.

The increase in the number of developers has led to a greater competition for roles, and employers are using various methods to effectively screen candidates. In comparison to most other industries, sourcing developers involves a completely different approach. For tech companies looking for new hires, the CV has almost become just a formality as many have discovered that simply relying on work history is not as important as being able to see a candidate's actual work. For software developers, the main bulk of their work is coding, therefore providing companies or recruiters with code samples is now a vital component of the job-application process.

Employers tend to find the majority of these code samples by searching through a candidate's GitHub account. GitHub has seen exponential growth in recent years with a community of over 11 million users. Due to its popular and widespread use among developers, it is fast becoming a hub for companies to discover talent and is a good basic indicator as to whether a candidate would be suitable or not. These companies and recruiters tend to look for developers who have been active within the GitHub community and have



## CREESHLA DOHERTY

Cofounder of Webfolio  
webfol.io

built a solid GitHub presence by contributing to various open-source projects.

Although competition is rife, there are a number of ways that can increase your chances of landing a dream role, even if you do not have extensive work experience or a programming-related degree.

Today in the tech world the digital portfolio is starting to overtake the traditional CV as it can display information in more detail and in a more interactive way. This enables companies and recruiters to gain a better all-round picture of a particular candidate. Therefore it is important that the digital portfolio or personal website is kept up to date and contains enough relevant content.

Constant learning is also essential and adding new skills or languages to your portfolio will help you to stay relevant in the rapidly changing digital world. Participating in coding competitions and creating side projects is a great way to gain deeper knowledge of a language, as well as expand your skill set. Side projects show versatility and can be regarded just as highly as work experience as it shows your interests and that you have the drive and determination to complete a project of your own volition.

Building an online presence is key whether that is through social media or an active blog. Another way to get noticed by prospective employers is to partake in discussions on forums or other developer communities such as Stack Overflow or SitePoint. Again, it is very beneficial to be active on GitHub as this can put you at a better advantage in the application process and it is also a great way for new developers to get a foot in the door.

As it became apparent that potential employers were asking for examples of code, my cofounder and I felt that there wasn't really anything out there that would provide a simple way to present code. GitHub is useful for getting a glimpse of a developer's coding skills but it is not often a true reflection of their work. Therefore we decided to create Webfolio, which would then

allow developers to describe and tailor code snippets to each specific job application. This is particularly useful for code contained within private repositories. Code snippets can then be easily shared with potential employers, thereby helping the developer to stand out and adding something extra to their CV.

# MAINTAINING HAPPINESS

When you start to feel your passion disappearing take some time to remember why you do what you do, says consultant Matt Gifford

I first started playing around with computers and programming when I was about six years old, using my dad's ZX Spectrum to make weird colourful block shapes. That fascination of building something from nothing using a computer never left me. I have always been, and continue to be, interested in tech and how things work. It wasn't until the late Nineties when that truly kicked in though. A decent home PC connected to the internet opened up a world of possibilities.

Browsing sites was fun, exploring the world through other people's webpages, but then it happened... I discovered the 'View Source' option in the right-click context menu. Behold, I was immediately presented with the actual inner workings of the websites I was viewing: their HTML source code. I was hooked. And I loved it.

I was suddenly able to dig into the core of the online world, to be able to learn how things were built by reading and translating how others had done it (whether good or bad). I was able to borrow code from an existing site, change the markup as I was learning it and see exactly how my changes affected the page and its content. This inevitably grew into creating my own pages from scratch (some good and many bad along the way) and viewing them locally. Then one day I discovered FTP and remote hosting. I had uploaded my creations to a remote server and saw that they were then available online for all to see. I had built something tangible. I had become part of the internet. Heck, in my head I was the internet. My future was sealed.

Working as a web developer used to be easier. When I got my first professional development many job roles were siloed. You were a developer, so you developed in HTML (or whatever server-side language). You were a DBA, a designer or a content editor.



## MATT GIFFORD

Development consultant, Monkeh Works Ltd  
monkehworks.com

Times have changed a lot. A developer now has to cater for the 'full stack'. You are no longer really siloed to one practice; a typical web project now uses multiple technologies and

resources (think Node, Redis, HTML, CSS, JS as core examples) with the added concern of responsive development for mobile devices and differing layouts. Whilst you don't need

to be a professional in all of these areas, you still ideally need to be able to understand what they are, how they can be used together and what benefits they may have for your work.

With more to focus on, and sometimes less people in a team to manage it, project deadlines can become tight. Staying current and up to date with language enhancements and new tools can be daunting, which also adds unwanted stress and pressure. Time is a huge factor here. How do we fit all of this into our everyday lives when life is busy enough as it is? Unhappiness creeps in, project fatigue becomes a desk-fellow. We run the risk of starting to lose our passion for web creativity. So, how can we combat this?

Sometimes it truly is better to do nothing at all. Literally switch everything off, step away from all of your screens, feeds, social media and code editors. Turn off your music and just sit. Gather your thoughts and mentally switch off for ten minutes a day. Recharging yourself is a crucial part to maintaining happiness, energy and focus and one that is often neglected.

Above all else, the most important thing is to remember your initial inspiration and love for what you do. By default, developers and web professionals are creative people. Through the highs and lows of projects or client sagas, we fundamentally enjoy developing new things, building apps and creating designs.

When projects drag on, your brain hurts from learning yet another new framework or you simply don't want to ever stare at another screen ever again. It's okay to take a break and step back. Recover, regroup and regenerate. Then remember what fuelled your passion.

For me it's that feeling of discovering 'view source' for the first time. Every day of development should have that feeling, and it can if you choose to let it.



# SSD PERFORMANCE AND RELIABILITY AMPLIFIED

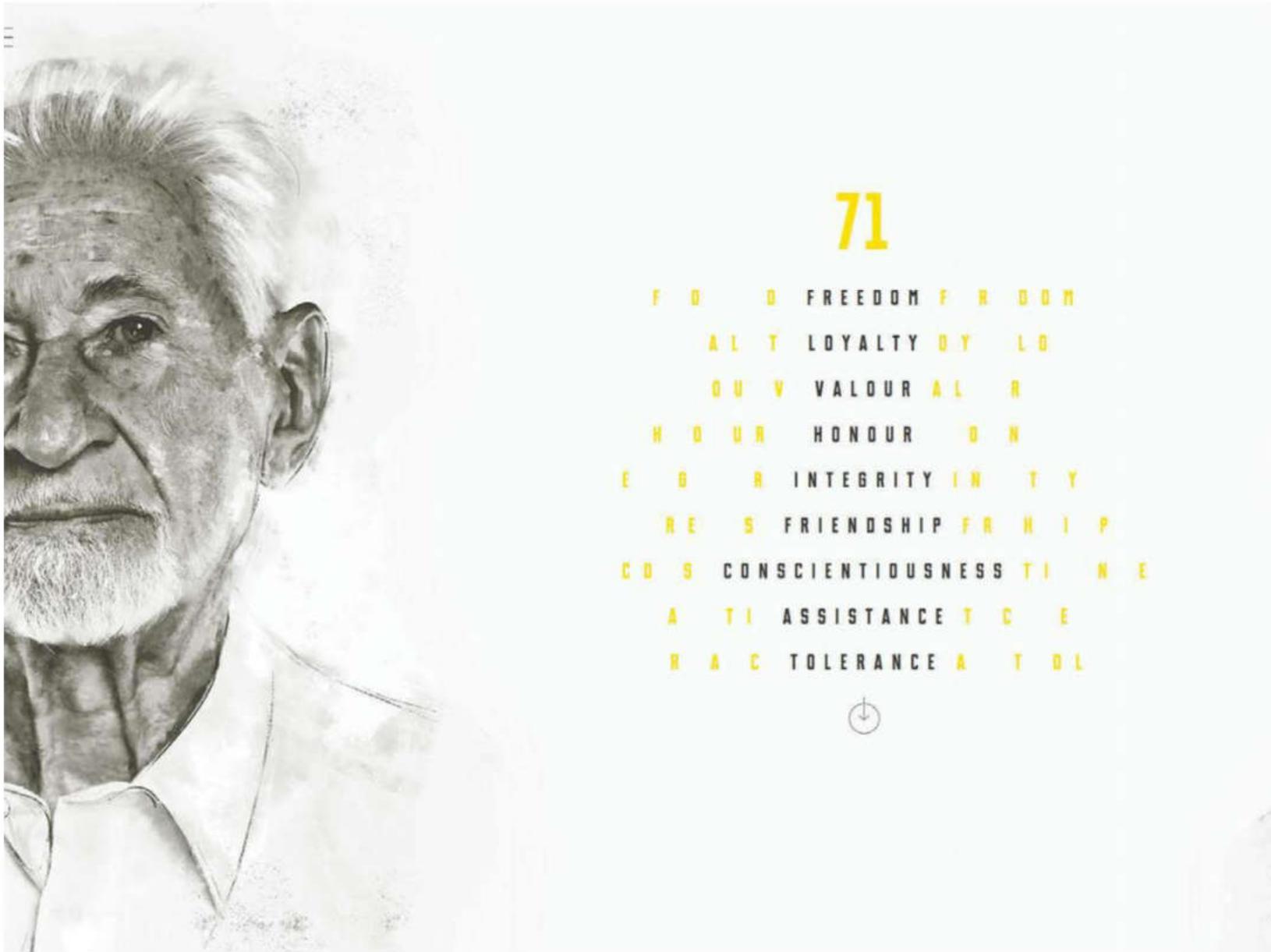
Amp up your system with the epitome of SSD performance and reliability. Developed by the most awarded SSD brand of all time, OCZ Vector 180 Series SSDs offer the fastest, most responsive computing experience and the be-all and end-all of feature-sets for those that demand only the best. With superior reliability in mind, the Vector 180 series features Power Failure Management (PFM) to protect the drive in the event of system power loss or fluctuation, ensuring you're up and running again in no time. **Be empowered by your storage.**

- Up to 550 MB/s
- Up to 100,000 IOPS
- OCZ Barefoot 3 M00 Controller
- Toshiba A19nm flash
- Power Failure Management Plus (PFM+)
- Available up to 960GB



A Toshiba Group Company





**<Above>**  
 • Typographic effects and animations combine beautifully with emotive portrait imagery, underlining the sense of humanity



**<Above>**  
 • Section headers introduce the featured faces, setting the tone with floating 'virtue' typography, links to videos and events

**<Above>**  
 • The central virtues are broken down into sections, each offering their own oversized headings, portraits and paragraph text

**<Above>**  
 • A scrollable timeline provides an events calendar with buttons for relevant sections and a handy link for downloading a PDF schedule

**<Above>**  
 • Event videos layer deeper context to the commemorations, while often identifying many of the faces featured throughout the site



# Anniversary of the Warsaw Rising

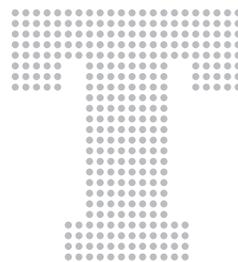
sztafetapokolen.pl

**Development technologies** HTML5, SVG, CSS3, jQuery, TweenLite, TimelineLite, SplitText, CSSPlugin, Modernizr



Designer **BrightMedia**  
brightmedia.pl

Progressive plugins underpin a poignant 70th anniversary memorial microsite



**his beautifully elegant site design, from the talented folks at BrightMedia, is all about legacy and remembrance.** Last year marked the 70th anniversary of the outbreak of the Warsaw Rising or 'Uprising', a Second World War initiative by the Polish resistance Home Army to liberate

Warsaw from Nazi Germany. As part of those 2014 celebrations, the Warsaw Rising Museum and local tourist board launched an initiative dubbed the 'Generations Relay' - asking organisations and businesses to "symbolically assume" ten virtues central to the historic 1944 insurgence. So this new domain is about reiterating that message one year on and

passing the baton again via a poignant HTML experience. Stirring background audio combines with a crisp white aesthetic and a direct focus on faces. Stylised sketched portraits, both young and old, stare out from the page, holding your gaze to emphasise this incredible human story. These background images then float gracefully through the space as you click and drag, hiding all superfluous elements aside. Scroll down and lengthy text paragraphs materialise in both Polish and English translations provide readable insight. Delve into the code and you'll find that interactions, effects and animations skilfully leverage a formidable collection of plugins. Greensock's selection of library tools does the legwork here, spanning tweening, timeline-based effects and a myriad of distinctive typographic animations sprinkled throughout.

**Stirring background audio combines with a crisp white aesthetic and a really direct emphasis on faces**

**ABCABC**  
**1234567890**

<Above>  
• Mr Alex, an uppercase font designed by Hipopotam Studio, is the bold heading typeface used in Bold and Regular

abcABC  
1234567890

<Above>  
• Ropa Sans, by Botio Nikoltchev and available via Google Fonts, is used to style paragraph text



## Discover powerful project plugins from Greensock

We identify some of the GSAP animation plugins used within Anniversary of the Warsaw Rising and what they might offer your own projects

### 01 GSAP and TweenMax

Certain UI effects, interactions and transitions used within [sztafetapokolen.pl](#) are underpinned by a post-Flash HTML5 animation library called GSAP or the Greensock Animation Library ([greensock.com](#)). Founded around TweenLite and TweenMax tools, GSAP's capabilities can be expanded with a series of downloadable plugins. Some of these are free to download (or link to via CDN as below), while others require Club Greensock membership subscriptions to access. Over the following steps we'll identify pertinent plugins for this Polish project.

```
001 <script src="https://cdnjs.
cloudflare.com/ajax/libs/gsap/1.18.0/
TweenMax.min.js"></script>
```



### 02 Using TimelineLite

Within a site such as [sztafetapokolen.pl](#), where GSAP's TweenMax is being used across a series of tween-based animations, TimelineLite ([greensock.com/timelinelite](#), CDN below) is employed as a timeline container for sequencing those tweens. This class gives animators more flexibility over using traditional tween delays by chaining methods such as to(), from() and staggerFrom(), while facilitating tween overlaps. What's more, TimelineLite enables global timeScale() timeline change to rapidly slow or speed up the collective animation sequence.

```
001 <script src="https://cdnjs.
cloudflare.com/ajax/libs/gsap/1.18.0/
TimelineLite.min.js"></script>
```

### 03 The CSSPlugin

The CSSPlugin extends TweenLite and TweenMax very simply to provide more direct CSS manipulations. With it, GSAP can animate most CSS-related properties of passed DOM elements - not

merely positional too but also transforms and CSS3-specific features. Previously CSS would be wrapped in their own css:{} objects, whereas now that object is created automatically making the syntax more natural and convenient. Camel case representations apply though over regular CSS property names, so margin-top becomes marginTop and so on.

```
001 <script src="https://cdnjs.
cloudflare.com/ajax/libs/gsap/1.18.0/
plugins/CSSPlugin.min.js"></script>
002 //Previous CSS syntax before
TweenMax 1.8.0
TweenLite.to("#myDOMElement", 2,
{css:{top:"100px",
backgroundColor:"#F05F2A"},
ease:Power3.easeIn});
003 //New syntax with the CSSPlugin:
TweenLite.to("#myDOMElement2", 2,
{top:"100px", backgroundColor:"#F05F2A",
ease:Power3.easeIn});
```



### 04 The SplitText Plugin

SplitText ([greensock.com/SplitText](#)) is a Club Greensock plugin useful for sites like [sztafetapokolen.pl](#) where text-based animations are required. Additionally, this JavaScript utility has no dependency on GSAP or indeed jQuery, but rather can be used in conjunction to split HTML text into component lines, words or characters for applying desired animations. Essentially calling SplitText() on a DOM object grabs the contained text and wraps each desired part in <div> tags, storing each in a searchable array.

```
001 //Splitting text within a chosen
page element by words, then character,
positioning absolutely rather than
relative (default):
002 mySplitText = new
```

```
SplitText("#myDOMElement",
{type:"words,char", position:
"absolute"});
003 //Returning each split element
within the mySplitText array
mySplitText.words
mySplitText.chars
004
```



### 05 The ThrowPropsPlugin

Not in fact employed within this particular site, GSAP's Draggable ([greensock.com/draggable](#)) in conjunction with ThrowPropsPlugin would however be ideal for emulating AofWR's dragging functionality. Chiefly these extend TweenLite and TweenMax to apply elegant drag interactions and physics to DOM elements. So not only can users drag and drop objects on your page but by setting bounds and grid snapping you can control the effect before ThrowPropsPlugin tracks velocity to stop with a smooth glide.

```
001 <script src="https://cdnjs.
cloudflare.com/ajax/libs/gsap/1.18.0/
utils/Draggable.min.js"></script>
002 //Basic CSS Transforms based drag
(type: x,y) with various bounding and
axis lock options:
003 Draggable.create("#myDOMElement",
{type:"x,y", edgeResistance:0.7,
bounds:"#boundingBox", lockAxis:true,
throwProps:true});
004
```





Authorized  
Reseller

# NOW YOU CAN AFFORD A BRAND NEW MAC



LESS THAN  
**£2** PER DAY



## YOU DO THE MATHS

### ALL OUR FLEXI-LEASE PACKAGES INCLUDE:

#### MAINTENANCE

- **3 Years** full cover for all hardware with remote and telephone support, plus loan equipment

#### LEASE RENEWAL

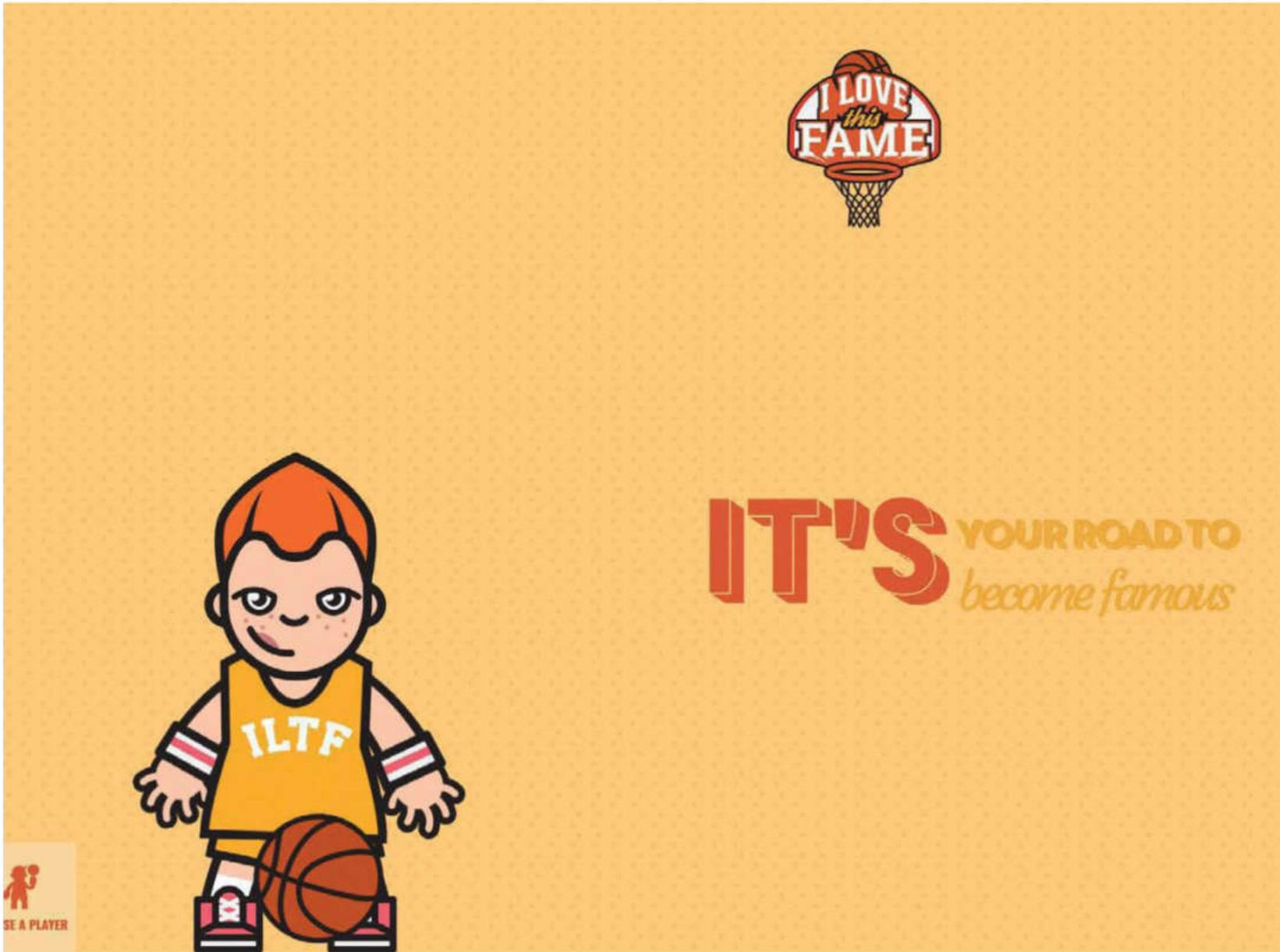
- after only **2 years** we will offer you a renewal to latest equipment and options to keep or return the old machine

#### OWNERSHIP

- at the end of the lease the equipment is yours for just **£1**

020 7111 1643  
WWW.HARDSOFT.CO.UK

**HARDSOFT**  
Established for over 25 years



**<Above>**  
 • I Love This Fame is a nonprofit initiative designed to encourage youngsters to play the game of basketball



**<Above>**  
 • The site keeps content minimal and focused on directing visitors to the central minigame and overall message

**<Above>**  
 • Cutesy artwork and characterisations, provided by Jacek Janiczak, give the selectable players charm and personality

**<Above>**  
 • Game animations and effects throughout the site are predominantly handled using a myriad of CSS3 transitions and transforms

**<Above>**  
 • Facebook links out to the Polish professional basketball star Marcin Gortat's MG13 Foundation, offering further inspiration for young fans

# I Love This Fame

ilovethisfame.com

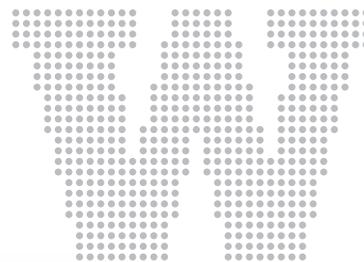
**Development technologies** HTML5, CSS3, SVG, RequireJS



Designer **Piotr Swierkowski/  
Torpedov.com (art direction),  
Jacek Janiczak (designer/illustrator)**

piotrswierkowski.com, torpedov.com, yaceky.com

Colourful microsite blends engaging HTML game mechanics with an inspirational message



While it may be fair to assume that Marcin Gortat won't be a household sporting name on UK shores, he certainly will be in his native Poland and indeed the USA. A professional basketball star within the NBA playing as a centre for the Washington Wizards team, Marcin is a big hero for children growing up

with similar ambitions to achieve their sporting dreams. I Love This Fame is a microsite aligning itself with Gortat's MG13 Foundation to encourage kids to take up playing basketball primarily but also use the sport as a way of broadening their horizons. Built by Polish design collective **Torpedov.com**, and headed

by Piotr Swierkowski, the UX work combines charming cartoon-y graphics with an astonishing array of CSS3 animations. Pick any of five characters to play as, before timing your clicks on an automated shot gauge to score some hoops and achieve an impressive points tally. "I Love This Fame is a nonprofit project based on original vector illustrations and a simple interface which, thanks to its usability, should encourage users to step through the featured basketball game," Piotr explains. "The most important component of our technique was a cartoon line-art style that matches perfectly [with] the subject matter, child-friendly and fun nature of the project. This line style was also used to create some of the interface's elements as well as the screen of the game, where illustrations are set in motion."

**ABCABC  
1234567890**

<Above>  
• Core Circus Pierrot 2 by S-Core provides the very distinctive 3D, chunky typography that makes the site so recognisable

*abcABC  
1234567890*

<Above>  
• Courgette by Karolina Lach offers a curlier, brushy italic typeface from Google Fonts to provide contrasting character

••• The most important component of our technique was a cartoon line-art style •••



## Draw and animate vectors like I Love This Fame

The design team behind the ILTF project offers an inspiring creative insight into how the recognisable graphics were produced and animated

### 01 Bold graphical styles

A key visual element of [ilovethisfame.com](http://ilovethisfame.com) is the very distinctive style applied to the site's graphics. Ranging from the logo, to the player sprites and indeed the simplified UI elements, each conform to a certain, consistent aesthetic throughout. These cute, cartoon-like assets adopt a crisp line-art style or 'flat' look that works alongside the typography and colours to achieve a bold look. Over the following steps we'll dissect some of those elements, identifying the drawing and animation techniques.



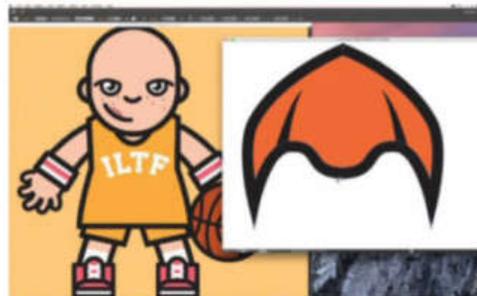
### 02 Illustrator techniques

In terms of tools, Illustrator was used to draw both the I Love This Fame logo graphic and compose the various player sprites. So firstly, referencing an incomplete version of the logo as shown, an element such as the basket rim and net would be added on a new layer, using the Ellipse tool (L) to draw the basic shape and the Eyedropper tool (I) to colour-match before contouring black with Path>Offset Path. The net outline would then be traced using a guide graphic and 7pt pen tool, stroking to outline with Path>Outline. It's then just a case of joining the two together and placing the whole element with the logo graphic against the remaining logo type.



### 03 Draw player sprites

The actual player illustrations can then be drawn in Illustrator using the same techniques to echo the same style. However, here each layer would be isolated so elements such as head, hair, body, legs and arms and so on could be individually edited for the various characters. So for instance a bald player could have a range of new haircuts applied easily, with recolouring or reshaping using the Direct Selection Tool (A).



### 04 Save as SVG

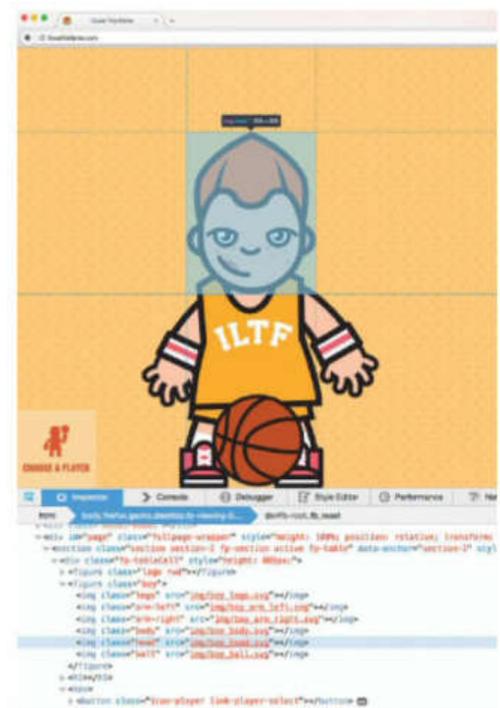
These illustrations can then be exported from Illustrator, in the case of ILTF, using Save As and choosing the SVG format. SVGs are vector-based, small in file size, and consistent across multiple screens - but the inherent usefulness within CSS-based animations makes them ideal here. These multiple player sprites are then absolutely positioned into the page.



### 05 Structure and motion

Using the opening page as an example, the first animated boy player is made up of six SVG images. These are grouped within HTML5's <figure> tag, specifically for semantically defining a self-contained illustration. Each then has a CSS class attached to apply the @keyframes animations for adding motion. By independently using transforms such as translateY(), rotate() and translate3d() with just small increments, the subtle head bobs, sways and ball bounces are achieved.

```
001 <figure class="boy">
002 
004 
006 
008 
010 
012 
014 </figure>
```





nativespace

ONLY  
**£14.99**  
PER MONTH

**NEW**  
FOR WEB DEVELOPERS

# GET READY FOR BLAST OFF...

FOR THE FIRST TIME EVER!



SECURE CLOUDHOSTING  
for WEB DEVELOPERS



ENTERPRISE GRADE CLOUD AT  
SHARED HOSTING PRICES

'MISSION CRITICAL' hosting packages



FULLY SCALABLE:  
Grows with your client base

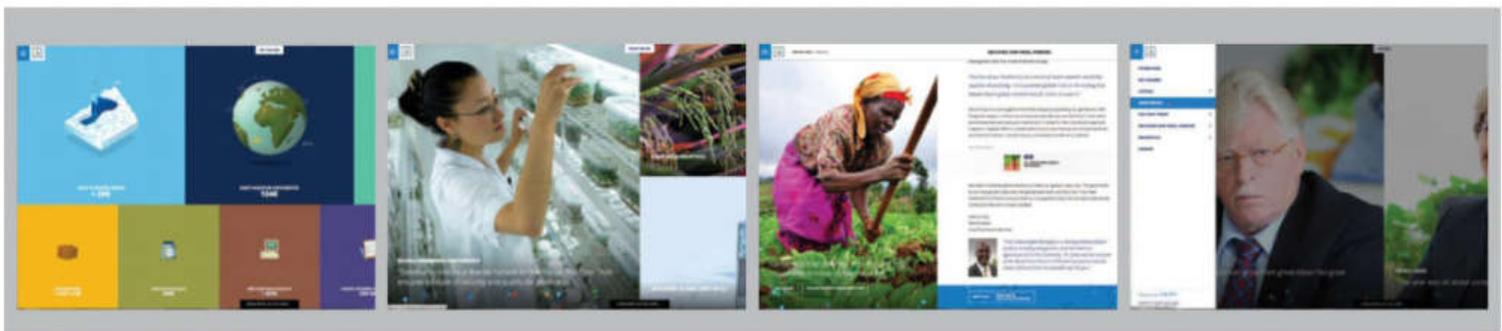


HOST UNLIMITED DOMAINS

LICENCED WITH CPANEL ... FULLY MANAGED ... ULTRA HIGH SPEC ... ULTRA LOW PRICE



**<Above>**  
 • The opening splash screen sets the agenda, but also an organic triangle and diamond motif inspired by the theme of seed growth and renewal



**<Above>**  
 • Aside from photography, the design introduces bright colours and subtle animated illustrations for highlighting vital figures

**<Above>**  
 • Top-level sections or chapters are made punchy and bold by using blocks, rollover panels for dividing key content into modules

**<Above>**  
 • For all the attractive presentation, the report succeeds in representing important and valuable content in a readable, digestible way

**<Above>**  
 • A readily accessible fly-out menu on the left side ensures quick access to the core chapters of the report for reference

# Crop Trust - Annual Report 2014

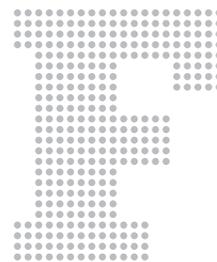
croptrust.org/2014

**Development technologies** WordPress, CSS3, SVG, Google Fonts, JavaScript, Tweenmax



Designer **EPIC Agency**  
epic.net

Imagination and clever content structure makes this Annual Report look good enough to eat



For those unaware, Crop Trust is a global organisation overseeing crop conservation and sustaining diversity. As a core element of its website, the Annual Report is pivotal to its aims for raising around \$500 million financing over two years - with this digital version designed to be more

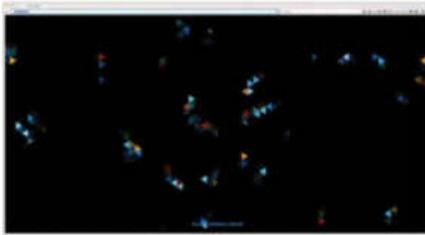
comprehensive than anything distributed in print. Designed by Belgian digital agency EPIC, the team also behind the full [croptrust.org](http://croptrust.org). Annual Report 2014 carries through established front-end styles seamlessly. The result subverts a typical stuffy, dry perception of corporate reports to present facts and figures in much

more engaging ways. Prioritising content and structure, the team devised "three-axis content organisation" to arrange key information within a one-page, panelled view before piling up chapter pages to provide a book-like experience. "Having previously worked on the complete rebranding of the Crop Trust, we wanted to convey its new identity in a very dynamic and animated way throughout the Annual Report," explains Karim Maaloul, partner and creative director at EPIC. "One of the most striking elements of the graphical codes we created consists of a grid of coloured triangles. This is how we came up with the idea of animating them on the homepage. The concept is about attributing a life cycle to the triangles: a way to make them grow, then disappear and reborn, just as crop seeds do in real life."

abcABC  
1234567890  
abcABC  
1234567890  
**abcABC**  
**1234567890**

<Above>  
• Open Sans by Steve Matteson, available via Google Fonts, styles text throughout the site and appears in various Book (300), Regular (400), Bold (700) and ExtraBold (800) weights

We wanted to convey its new identity in a very dynamic and animated way



## Animate a TweenMax decorative page effect

EPIC's Karim Maaloul explains how you can rapidly add Crop Trust's distinctive TweenMax-powered animation to your page and customise the effect

### 01 The triangle element

A distinctive element of the Crop Trust project is a triangular overlay animation used in various places to add a subtle dynamic motif. Rather nicely the code for this effect, known as 'Triangles Life', can be viewed, edited and customised on CodePen. Over the next few steps we'll look at how this code can be employed quickly and simply within your own HTML.



### 02 Download the scripts

In terms of the script and libraries required, you'll need to download the main TrianglesLife.js JavaScript via the GitHub listing at [github.com/yakudoo/TrianglesLife](https://github.com/yakudoo/TrianglesLife). Additionally the effect requires TweenMax, Greensock's JS library (TweenMax.min.js) for animating DOM elements that may be downloaded from [greensock.com/tweenmax](https://greensock.com/tweenmax). Both of these files can then be copied into the root of your example page.



### 03 Include within your HTML

Next you'll want to include those scripts within the head of your HTML document. Should you prefer here, the latest TweenMax can be linked to via CDN instead with [cdnjs.com](https://cdnjs.com) as shown below. Beyond this, our example page structure is very simply a <canvas> element required for drawing the animations, defined with a unique ID for styling and passing into the code:

```
001 HTML:
002 <script src='TweenMax.min.js'></script>
003 <!-- OR via the latest CDN as follows
004 <script src="https://cdnjs.cloudflare.com/ajax/libs/gsap/1.17.0/TweenMax.min.js"></script> -->
005 <script src='TrianglesLife.js'></script>
006 </head>
007 <body>
008 <canvas id="myCanvas"></canvas>
009 </body>
010
```

### 04 Style the canvas

We now want to style that <canvas> element within our CSS. Here you can define a specific width and height, however we'll stretch the canvas across the viewport and maximise the size by setting both width and height properties to 100%. By making the background a dark colour the colours are more contrasting, but equally the background could be transparent or overlaying an image.

```
001 CSS:
002 #myCanvas {
003   position: absolute;
004   margin: auto;
005   width: 100%;
006   height: 100%
007   background-color : #222;
008 }
009
```

### 05 Initialise the effect

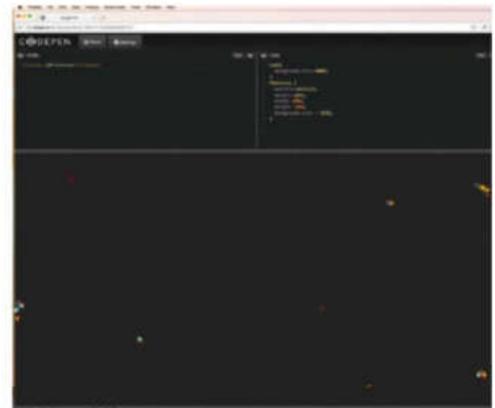
With the main drawing functions already written and attached to the page, it's now a case of initialising the various parameters or 'params' before calling the start function. You can see here the various options passed and commented so you can see how to adjust them to edit the effect. Aside from setting triangle width and height, you can also adjust the 'trail' - the amount of connected triangles and how long they take to spawn or fade. In addition you can pass a variety of hex codes to dictate the preferred colours:

```
001 <script>
002 var params = {
```

```
003   canvasId : 'myCanvas',      // id of your canvas
004   triangleWidth : 16,        // width of each triangle
005   triangleHeight : 18,      // height of each triangle
006   trailMaxLength : 12,      // Maximum of connected triangles to form a trail
007   trailIntervalCreation : 200, // Delay before the creation of a new trail (in milliseconds)
008   delayBeforeDisappear : 2,  // Delay before a trail starts to disappear (in seconds)
009   colors : ['#eb9000', '#f6b400', '#8a0a08', '#91dffa'] // Colors you want to use for the triangles
010 };
011 };
012 var tl = new TrianglesLife(params);
013 tl.start();
014 </script>
015
```

### 06 Save, test and preview

Now we will save the page now and test our work inside of our chosen browser. Alternatively, you can check out the CodePen at [bit.ly/1MSy56j](https://bit.ly/1MSy56j) as it offers a live preview with fully commented code that you can customise and experiment with on the fly. What's more, the added GUI offers us some additional controls for changing the parameter values during runtime, and this provides us with an intuitive way to observe cause and effect for how the animation responds to the various tweaks on the page.



# catalyst2

managed hosting



www.catalyst2.com

0800 107 7979

Providing helpful, reliable, **hassle free hosting for 15 years**

We do all the server management so you don't have to

Our **Managed Hosting** is...

- **UK based** (support and servers)
- **Value for money**
- **A worry free service**
- **Reliable and Stable**  
– 99.97% uptime since May 2007

**Winner**  
ISPA CUSTOMER CHOICE AWARD  
2013 + 2014 + 2015

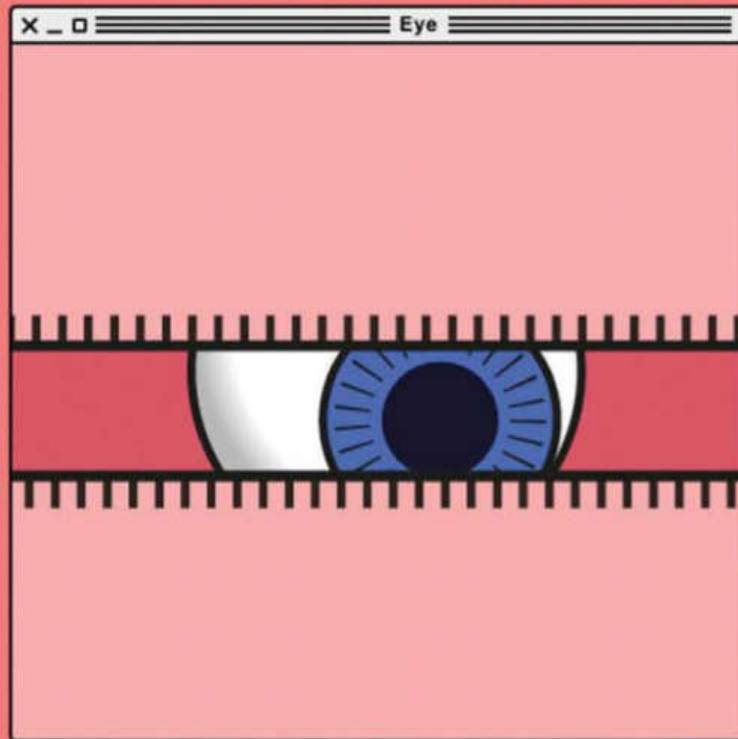
**99%** of our customers rate us **good, very good or excellent**

**Try us today.**

**30 day no quibble money back guarantee.**

**0800 107 7979** **info@catalyst2.com**

Sign up today and get **10% off** any package using the code **WEBDESIGN**



# THE MAKING OF FRANKENSIM

What would Dr. Frankenstein have made with a modern web toolset? Animade's latest project imagines just that

**C**reativity comes in many forms, but the process of being creative is what can make or break a project. No one heads into the realms of a project with the intention of failing, but it is those that strive just that little bit more to reach creative nirvana that succeed beyond the obvious.

Animade, the team behind the frankenSim project fit neatly into the analogy, always striving to make top-notch creative work that brims with character. As they said themselves, "It's the subtlest gestures and tiniest details that leave a lasting impression, work should connect with audiences in a personal way".

A close-knit team creates friendships, and friendships can create close-knit teams. Animade are rooted in childhood friendship, they evolved out of a creative meeting of minds and a ceaseless curiosity. This is something they have nurtured in their five years together and something they will continue to do for as long as they exist.

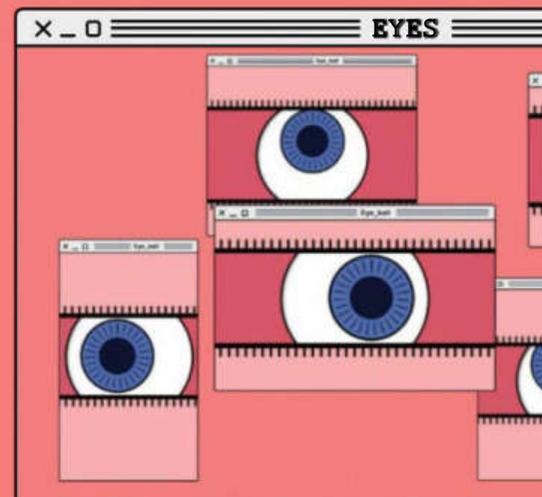
Animade love to tinker and experiment, to have fun with tools and ideas and out of their love for both came

frankenSim. What was the thinking behind the project? Designed by team member Milo Targett, frankenSim was the evolution of a previous project going under the title of Lido Sim, also designed and directed by Milo.

The theme of the new web toy is a grotesque, pink-hued dissection of the human body, with interconnecting pop-up windows containing organs to manipulate. Rolling eyeballs, blonde locks riddled with lice and a hairy nostril are among the malleable body bits in this virtual laboratory, with more absurd twists and surprises emerging as users explore.

In part, frankenSim is a musing on how Dr. Frankenstein might have experimented with modern web tools. To get a better picture of the project we left it to animator and designer Milo Targett to explain in his own words. "I made a film about half a year ago called Lido Sim. The film is about a virtual character whose attempts to take a swim are thwarted by an unseen user. When the windows are adjusted there's a direct effect on the content they contain, namely the swimmer.

frankenSim is a continuation of this theme, a kind of



## THE MAKING OF FRANKENSIM



Comb



Brain



Eye



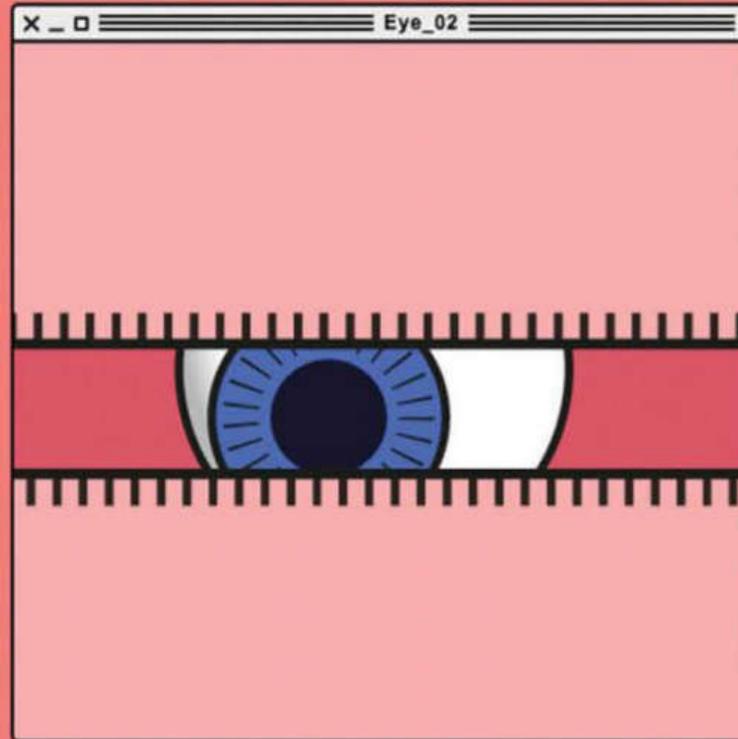
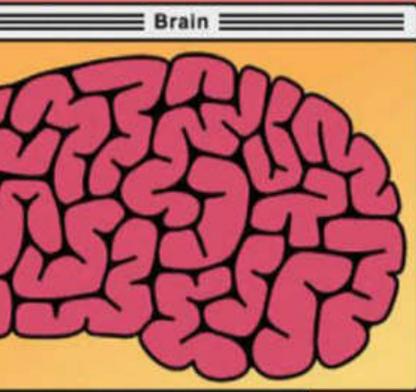
Nose



Mouth



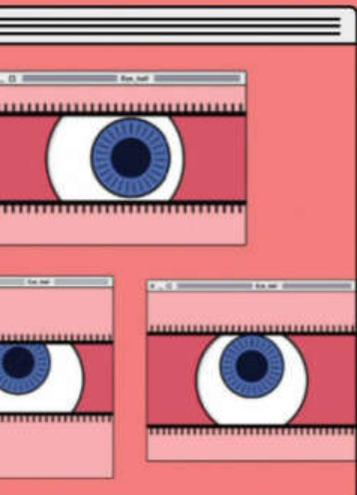
Heart

**LET THE USER TAKE CONTROL**

Animator and designer Milo Targett created the graphics, but felt odd relinquishing the creative power to site users: “Much of the visual style was based on the interface in Lido Sim, so this was used as a general style guide throughout. The interface is clearly based on an old iteration of Apple’s OS, as I wanted it to seem a bit outdated. The artwork itself was loosely designed in my sketchbook, then worked up in Illustrator and exported into SVGs.

“It was a real learning curve for me personally, as I hadn’t translated many of my drawings into code before and often things looked very different when they were housed in the site. We repurposed one of our previously unreleased web toys for plucking virtual hair and then merged it into the nose-plucking app. By pulling a nose hair you can watch the eye squint in another window. This turned into one of my favourite features as it caused two different apps to interact. After the initial concept and artwork was finished, I had to get back onto other projects in the studio so I took on the role of overseeing and directing the project as it progressed.

“It was interesting to see the ways that people interacted with the game once it was out. One of my main concerns was that the site should look good however you set it up, particularly colour-wise. Compared to Lido Sim where the composition was very much designed by me, it was odd to relinquish this control and let the user determine how it looked.”

Project  
Web**frankenSim**  
[animade.tv/frankensim](http://animade.tv/frankensim)Agency  
Web**Animade**  
[animade.tv](http://animade.tv)Within first  
24 hours:**12,000 page views**  
**9,000 users**

Within 4 weeks:

**46,000 page views**  
**36,100 users**

Project duration:

**Around four months**

sequel that builds the perverse pleasure of playing god to a more literal level. I wanted the viewer to take on a more active role in the manipulation, rather than just passively watching.

“My starting point was [looking at] the uses of online medical data, particularly people’s fears that the data could be used unscrupulously by insurance companies. I wanted to visualise a fictional program used by insurance companies to keep tabs on their clients; in which case I feel very sorry for the nit-ridden character whose information is represented in frankenSim, as his premiums are probably through the roof.”

“As I was developing the body parts I found there was a simple pleasure in forming a face and then distorting and abstracting it, which I think is the main appeal of the site. I have very little experience in writing code but by using After Effects I was able to mock up working visualisations of each toy during studio downtime, which helped to explain what I was thinking. We decided it was worth developing and with help from our intern at the time, Max Stoiber, the project was initiated and the ground work laid.”

As an internal studio project, frankenSim didn’t have to follow the typical two-party process. It was very much a case of work as normal, but founder and director Tom Judd took time to explain how Animade work: “In terms of our usual working process, we are in constant communication with our clients as their involvement in the process is paramount to the success of any project. At the beginning of the process our communication is more frequent and almost on a daily level, but once we’re a couple of sprints into the project this reduces to a more weekly basis.

“When we kick off an interactive project for example, we typically run a workshop at our studio to try and fully understand the fundamentals of the project vision. In the weeks after this, and as we move through the first couple of sprints, we are still aligning our interpretations of their vision and for this reason we’ll often share on a daily basis. This allows us to test our assumptions and check that our visions are fully aligned before we commit to the bulk of the project.

“Once we’re all agreed, we typically have weekly or bi-weekly release meetings in which we share completed work and talk through our process – we encourage face-to-face discussions were possible.

“It’s worth mentioning that throughout our projects we are also in communication through the use of Trello, the online project management tool – we share project Trello boards with our clients so they can see in real-time what is being worked on. This level of transparency reduces risk for both ourselves and the client, and allows us to get quick feedback where needed without the lead-time of booking a call or a meeting.”

## THE BIG TAKEOVER

Marketing communications coordinator Amy reveals how Animade’s many social media accounts were key to getting frankenSim noticed amongst the busy web world: “We get very excited about sharing studio projects with our online audience, so a big social media push was always in the pipeline for frankenSim.

“Before releasing the project publicly, we sent out press kits and sneak previews to a small selection of magazines – as a result of which, we were lucky enough to have frankenSim featured on It’s Nice That the following morning. An accompanying walk-through video published on It’s Nice That’s Instagram swiftly became the most-liked post to date on their hugely popular account!

“We then launched frankenSim across all our own social media platforms, including Twitter, Facebook, Dribbble, Tumblr, YouTube, Vimeo and Instagram – for which we did a special takeover feature – with material that we’d planned and prepared in advance.

“The site took off instantly, attracting 12,000 views in its first 24 hours in the public domain. We were blown away by the incredible reaction online; people really got stuck in, and we were particularly delighted when users started sending us the weird facial arrangements that they’d lovingly made on their screens.

“After the initial phase of release, we got in touch with more magazines, produced a case study for the Animade website and submitted the project to the FWA and Awwwards, for which we respectively won Site of the Day and a Special Mention. We also won Website of the Day on CSS Winner.

“Once the project was out in the wilderness, our lovably grotesque monster did all the work himself.”

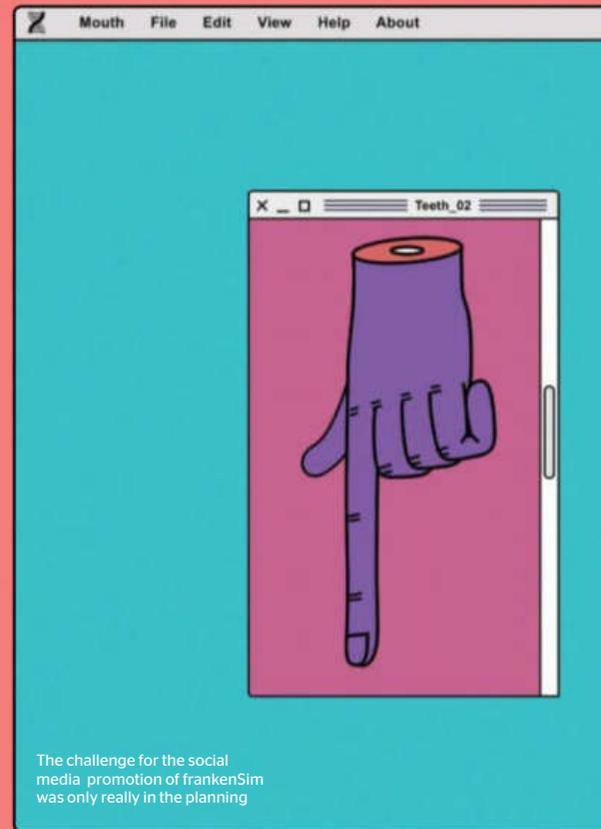
Getting back to the frankenSim project we asked Targett how he got the early ideas for the project. “The project started in my sketchbook with these weird illustrations of organs and body parts in windows, and through a few days of experimentation grew from there.

“As I said, After Effects was invaluable in the concept development of each part. By using After Effect’s built-in expressions engine I was able to show quite accurately how some of the body apps worked, and more importantly if they worked. These experiments served as the framework for the site. Once we had decided if each app was interesting or relevant enough, the simple code I had written was translated onto the site.

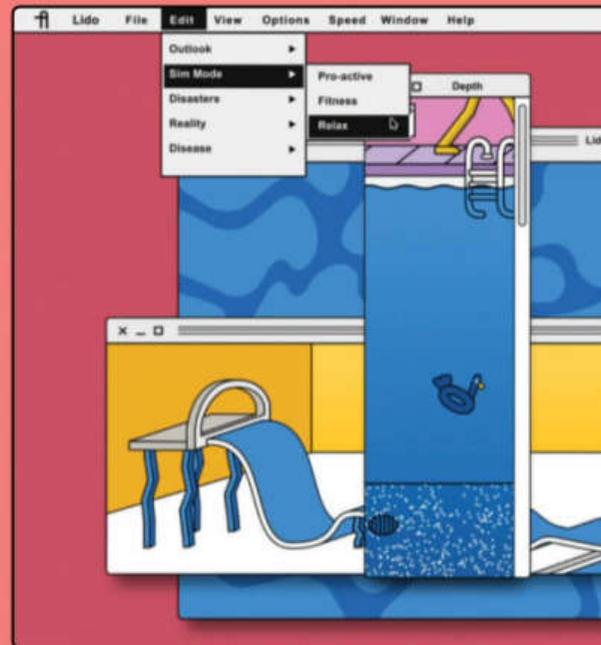
“As the project was progressing, more and more avenues opened up and were explored. More

## PULL QUOTE

“[IT] COULD HAVE TAKEN DAYS TO IMPLEMENT (THERE WAS TALK OF A ‘GENITALIA EXPANSION PACK’)!”



The challenge for the social media promotion of frankenSim was only really in the planning



importantly, however, it was a continual process of cutting back and refining what I had in order to make the project more manageable. One seemingly simple idea sketched out in a few minutes could have taken days to implement (there was talk of a ‘genitalia expansion pack’)! This method of working ensured that we didn’t find ourselves down too many blind alleys, chasing wild geese.

“I handled the CSS animation using online web tools that took a bit of getting used to. We have since figured out some very exciting new ways of translating our After Effects animation into code. A lot of our time was spent on figuring out how the user would interact with the site, whether it was easy to pick up from the get-go and whether it made some sort of sense. The most counter-intuitive moment was trying to think of a use for



The London-based studio has a host of services from Ruby on Rails development to scriptwriting

QUESTION

In the world of frankenSim would you class yourself as a comb, brain, eye, nose, mouth or heart?



“ I’d say an eye, just one eye, because there’s so much we need to see and do. ”

**LANA SIMANENKOVA**  
ANIMATOR AND DESIGNER



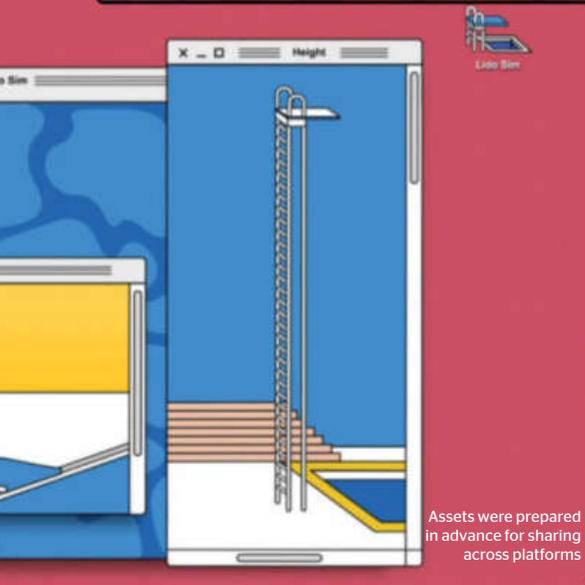
“ I’d be the nose. My nose hairs grow back just as often, but the comedy sound effects would make the task of plucking so much more enjoyable. ”

**RUSSELL ETHERIDGE**  
SENIOR CREATIVE

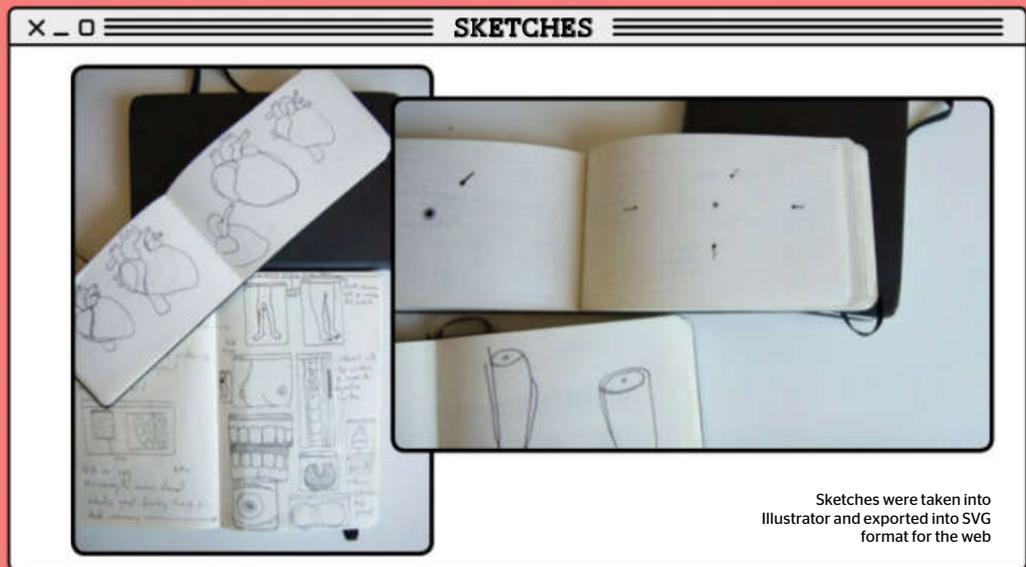


“ I’d be the nose, because I squint if you pull my hair. ”

**JAMES CHAMBERS**  
FOUNDER AND DIRECTOR



Assets were prepared in advance for sharing across platforms



Sketches were taken into Illustrator and exported into SVG format for the web

the ‘minimise’ button, as actually minimising would have meant a whole new level of arbitrary functionality. In the end we just made it spin the window around (functionality be damned).”

FrankenSim is a visual, interactive extravaganza wrapped up in a single-page application. This meant that the coding challenges were more focused for certain areas of the project as senior front-end developer Simon Neveu reveals: “We knew the project probably wasn’t going to be a site people came back to again and again, so we didn’t have the need to save any data or require a backend. With it also being a web toy, as a single-page application we didn’t have the need to consider how we would build our pages on the server-side for SEO: a nice change. It was to be expected that if the site did well it might get a lot of traffic in a very short space of time, or

at least we hoped it would. To remove the risk of server outages or slow response time when serving our assets during these busy periods, we chose to host our assets on a quick and reliable hosting platform, in this case it was Amazon S3.

“In terms of the front-end build, a lot of what could have been quite difficult technical challenges of the toy itself were considered in the design and previsualisation animations, like how the mouth parts move together for example. The way elements move or the amount they scale in relation to one another had already been calculated, and this made our development of them much smoother.

“Many of the self-initiated projects are in part about getting familiar with the newest tools, technologies and frameworks, and with frankenSim we [thought that we

would take] the opportunity to get to know the Flux application architecture.

“We recently began using Facebook’s React in our projects and the whole team has really taken to it, so putting that knowledge into a complementary architecture seemed like the sensible thing to do. We’ve since got to know some Flux [implementations] that are exciting too, like Alt for example, which is well worth checking out.

“A smaller challenge that one of our developers looked into was to make sure the loading screen was engaging. We wanted the site to be fun from the get-go and so freedom was given to a developer to turn the idea of frankenSim as a sperm into something quite playful. He chose PaperJS as his weapon of choice and we’re quite pleased with the outcome.”

# ALL OF US

Placing design at their epicentre, AllofUs has developed cutting-edge design solutions that continue to evolve and shape the physical and digital spaces their client's customers inhabit

**who** AllofUs

**what** AllofUs is an award-winning digital agency specialising in the planning and design of customer experiences for the interconnected age

**where** 7-11 Herbrand Street, London, WC1N 1EX

**web** allofus.com

## **Key clients**

Google

British Museum

Bastei Lübbe

V&A

Ikea

**W**ith diverse yet complementary careers that led to the founding of AllofUs, the agency has moved in and out of private ownership to arrive at its current structure that will see new products and services that could disrupt several current industries before too soon.

“The original founders all met at a well-respected interactive design agency,” explained MD, Phil Gerrard. “We were, in effect, the management team at Digit. My background is in advertising where I also got involved with digital early on building big websites for clients. When I met the guys at Digit I thought they were doing something really interesting.”

Phil then explained the initial ideas at AllofUs: “Using terms like ‘creative technology’ and ‘user experience’ has become commonplace, but back

AllofUs continually strive to meld the digital and physical worlds together into ground-breaking design



then - this would be around 2003 - the team was using sensors and other physically interactive ideas to develop new digital campaigns. Installations for exhibitions, for instance, really showed what they could do with the technology. This opened my eyes to what could be done.

"We could see that there was an opportunity to start a new type of agency, which became AllofUs. What we wanted to do was to take design as a principle foundation but also drive what could be achieved with a real experimentation of the technologies we had available. Those two principles drove what the original founders of AllofUs wanted our new agency to be about. So we set up AllofUs and then later sold it to Interpublic. However, we bought back the company so we are independent again."

Being independent again of a parent company is a strategic move that can enable AllofUs to forge ahead with their own unique vision for what an interactive, immersive digital experience looks like today. The three core founders, Phil Gerrard, Orlando Mathias and Nick Cristea, of the new AllofUs offer a set of complementary skills that, when combined together, places the agency at the forefront of design.

Phil has a background in strategic planning and advertising; Orlando has a background in fine art and is the director of R&D, placing innovation at the heart of each AllofUS project; and Nick is a strategic director from a product design background, so he has been looking at how the agency can bring product and industrial design to the digital space.

"We became one of the early developers of product design in the digital environment," said Phil. "I think these skills have enabled us to continue to develop meaningful platforms that have stood as innovations in their sector. A good example is the Sky Player that is now Sky Go. We were one of the first agencies to offer product services design."

As the original founders were close working colleagues before AllofUs, this has fostered a level of trust that has meant that the skillset that the agency contains has been applied to each project with innovation. It has marked the agency as one that not only works in the digital space, but also one that pays close attention to the wider environment their clients inhabit.

Phil continued to divulge: "The agency is strong, I think [that this is] because we have a diverse set of skills, but we all get on as mates and have a similar drive to develop and innovate with technologies. When we set up our store, we didn't want to focus too much on marketing and communications. We never saw the creation of digital content and its link to advertising as the core of our business. Design is what we all wanted to do, but [we wanted] design that creates meaningful



## INDUSTRY INSIGHT

Phil Gerrard,  
MD and cofounder

“We never saw the creation of digital content and its link to advertising as the core of our business. Design is what we all wanted to do, but [we wanted] design that creates meaningful experiences using technology and the ethics of good design to move the conversations on”

experiences using technology and the ethics of good design to move the conversations on.

"We all had this shared collective interest in the cultural sector. So we started to pick up a lot of work from museums and galleries, simply because they were one of the sectors to really embrace new types of technologies. This gave us a head start with how you go about designing a space using sensors and how technologies could be integrated into physical objects for exhibitions.

"The museum and gallery work sat alongside our website work. Over the last five years we have seen how mobile has become the dominant platform. We have also witnessed the development of new sensor technologies. Together these two elements are driving how digital design is evolving. We have always taken an holistic approach and looked at how products, services, the internet and mobile can all be brought together to create new user experiences."

Design then is the core driver behind every piece of work at AllofUs. It's the design sensibilities coupled with technical prowess that brands are looking for when they want to develop multilayered campaigns that speak to their customers. "We try and sit above the technology, the platforms, and

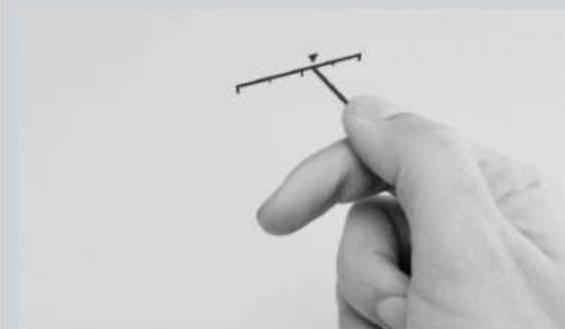


## GOOGLE SOLI

[google.com/atap/project-soli](http://google.com/atap/project-soli)

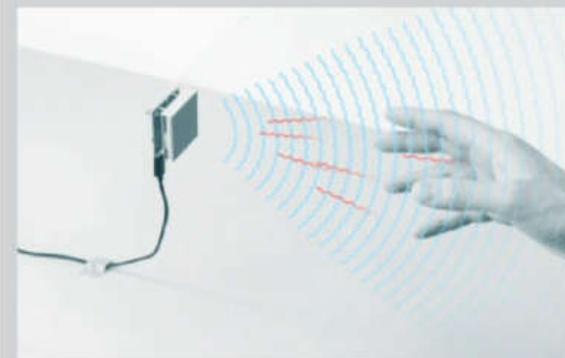
In early 2014 we became a partner with a self-proclaimed 'band of pirates' called ATAP (Advanced Technology and Projects). ATAP is Google's maverick team of engineers and they pursue projects in a fast-moving system designed to accomplish in months what usually takes years. They were on course in developing a new gesture-based device utilising radar tech, announced at Google I/O 2015 and named Project Soli.

Soli utilises the unique capabilities of radar technology, essentially tracking submillimetre



gestures at high speeds and accuracy with the added feature of gathering this data whilst hidden under a range of different materials.

Google understood the potential of this technology and approached us to explore real-life uses for a large array of different applications.



Our explorations took us into many industries from automotive to healthcare and the world of IoT. We worked closely with the ATAP teams.

Now that the ATAP team has created the hardware we will be utilising the SDK to prototype and bring to life some of the concepts developed over this period.



Placing design at the centre, brands come to AllofUs to develop new interactive environment for their customers

add our design expertise that utilises these technologies to deliver these new experiences,” said Phil. “We actively don’t specialise in one particular technology or design types. Taking a wider view allows us to stay relevant and to use the latest technologies for our clients.”

Naming your new business is vital to get right, but can often become a long drawn-out affair. AllofUs struggled to name the agency they wanted to start, but a chance conversation resulted in a business name that encompasses what AllofUs stands for, as Phil explained: “The name we came up with was really by chance. We used to have meetings at my flat and sit in the garden and discuss the work we were doing. By the end of the meeting we had a few drinks and our attention would turn to what to call our new agency. We were having real problems agreeing what our name should be when someone said that the agency is about all of us.

“One of our original founders was a graphic designer. He saw something in those words and went away and created a logo design. It took us a while to get used to, as we did initially think it was a bit altruistic, but we could see that the name did say something about our business, which is at its heart all about collaboration.”

Being established for over a decade, AllofUs has a client roster that includes some of the world’s leading brands. What is most striking, though, is that these brands are diverse and cover a wide range of market sectors. This has been deliberate, as AllofUs actively ensure they are not seen as an agency that specialises in one particular type of work. Placing design at the centre of all they do means that these principles can be applied to any brand from any industry.

Phil explained: “As we have been going now for over a decade, we are well established so a lot of the clients we work with have approached us. Our contacts also are a great help when it comes to locating work. And of course our website is critical in attracting clients, as they can see the kind of work we have been doing. We don’t do a great deal with aggressive lead generation. Most of our work now comes through recommendation, which we think is the best way of expanding our client base.

“The variety of clients we have is diverse. We like to work with startups, as this is very much a meeting of minds. We also have corporate clients.

“Some of the most recent solutions we have engineered utilise Sass, which follow SMACSS, BEM and OOCSS methodologies. We also follow a strong component-based development approach in which we use task runners and module bundlers such as Grunt, Gulp and WebPack. All of our solutions are designed and developed with responsive technologies such as CSS3 media queries, flexible images and fluid, proportion-based grids.

“As new technologies, platforms, devices, frameworks and methodologies are released we can shift and adapt our approach and methods to include them in our active development process.

We actively investigate new technologies and research emerging digital tools, which can advance the user experience and help us create a dynamic, powerful and performant web applications. AllofUs

**We actively investigate new technologies... which can advance the user experience**

This range means we can work on diverse projects and also helps us attract the right talent to our business. And because of the nature of the work we do, we tend to also get procured by a business. We will work with them to achieve their goals. Of course we look at new clients from a business perspective, but we also ask whether we can achieve the Holy Grail of delivering a project that excites us and also meets the client’s brief.

Michael Chase is the creative technology director at AllofUs. He explains their approach to development: “We tend to approach all of our projects with the essential focus being on both the user’s needs and the client’s requirements for the desired web and/or mobile web platform. This focuses our approach and allows the technologies to fluidly surface directly from the balance of these two audiences. As a result, we are technology agnostic, as it is just a means to an end for AllofUs.

develop for multiple platforms which include (but are in no way limited to) iOS, Android, openFrameworks, Unity, WebGL and so on, so we have the distinct advantage of being able to take advancements from other mediums and platforms and apply them to our work within the web space. This allows us to stay nimble and agile and not tied to one single technology or vendor yet constantly progress forward while maintaining innovation.”

Agencies can become known for a particular type of work that informs the ethos of the agency. For AllofUs, their ethos for work comes directly from their founders. “We do have a set of values that mirrors the values of our founders,” Phil explained to us. “We have always wanted to be known as an agency that understands great design, progresses product development and places the user at the heart of the experience. We wanted to move on the conversations.



"These are the values we want to be known for. We have always been chameleon-like, refused to be pigeonholed and [have been] able to evolve as the market changes. What is certain is that technology will constantly reinvent itself. As an agency we want to be at the forefront of that and position ourselves to take advantage of those changes as they take place. I think we have done that quite successfully."

How agencies work is always fascinating to decipher. Phil explained how AllofUs is organised: "We are about 20 people full time. We organise the company with a management team who are also heads of department. We have the user experience team. They are a mix of strategic user experience designers who can understand user research and develop our solutions with the insights that this material gives us."

"The design team come from visual and graphic design backgrounds. Other members of the team have expertise with mechanics and methods. They take the work that the user experience team have done and turn that into a design solution. And the development team concentrate on the front-end design, whether this is using web technologies or mobile across the leading platforms."

As a close-knit team, AllofUs takes their time to find the right people to add to their roster of

employees. In an environment of design and digital tools that moves and evolves so quickly, when someone stands out from the crowd AllofUs will immediately take notice.

Phil explained their approach when they are hiring: "When we are looking for a new team member we tend to instantly know whether someone will be a good fit for us. We look for someone that has a multidisciplinary approach to the work they have done. We like people with vision. We also look for detail in the execution of the work they present to us. Collaboration is obviously very important for us, as we work in teams that need to work closely together."

"We tend to get seduced by people that are already doing their own thing. They have understood the market or industry and have produced work that is impressive in that context. You know if someone has gotten themselves a placement working somewhere, you'll look at their CV more favourably, as they have clearly demonstrated they can already work in a team and produce great work."

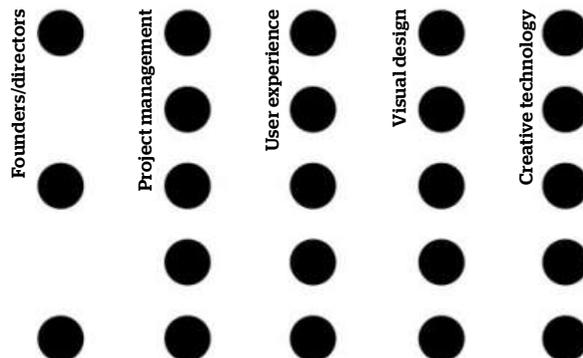
"Also we take on a lot of graduates and we offer placements. We go into universities and give talks about our industry and what we are looking for when it comes to new employees or when we need

to bring in outside help for a project. My way into the industry was actually via a placement, so this can be a great way to get your start."

AllofUs is entering their rebirth as an independent business, which the company relishes as this gives them the freedom to pursue the work that they really want to do for their clients. "As we have just bought the company back, it's almost a whole new beginning for us," Phil concluded. "We want to continue to move the conversation on and do work that is different. We want to develop an agency with its own IP that uses different remuneration models. There are a couple of new projects we are working on at the moment. One is to develop a new reading platform for fiction that we think will be quite disruptive and is being backed by a major publisher."

What is clear is that AllofUs is now in a position to change the conversation about digital design and how our environment interfaces with campaigns and content. Looking past the screen, AllofUs is designing the future, today.

## AGENCY BREAKDOWN



# All of Us™

WEB .....allofus.com

FOUNDERS ..... Phil Gerrard, Orlando Mathias,

Nick Cristea

YEAR FOUNDED ..... 2003

LOCATION ..... London, UK

### SERVICES

- > Responsive web
- > Multidevice apps
- > Physical environments and objects
- > Brand identity
- > User experience planning

# THE ART OF WEB FONTS

HOW TO CHOOSE THE RIGHT TYPE AND WHY IT MATTERS

# Why choosing the right font matters

THE FONT YOU USE SETS THE TONE OF THE TEXT. IT CAN EVOKE A SENSE OF TIME, PLACE AND EMOTION. MAKE SURE YOU CHOOSE THE RIGHT ONE

**T**he primary duty of typography is to convey information in writing. To paraphrase Emil Ruder, the great Swiss typographer, a website which cannot be read or understood becomes a product without purpose. However typography does not just convey information. It also imparts feeling, emotion and sentiment, as well as arouse preconceived ideas of content, tone, trust and suitability.

As a designer, the way that you set your type – for example when you are tweaking the size, spacing, colour and context – will go a long way to forming a negative or positive experience. The quality of your typesetting can have a big impact on how your reader feels when they see your creation, but the most significant contributor of all will be your choice of typeface.

When considering a typeface for your website body copy, that is to say the bulk of the text to be read, your decision will largely be driven by practical considerations. The type you choose for body text should remove as much friction as possible between your reader and the text. The last thing a reader wants is to spend time with a typeface that keeps trying to grab their attention – that would just get tiresome and irritating after a while.

After your initial choice between a sans and a serif, you will be looking for similar traits in a typeface; maybe you are looking for something that has sturdy and simple shapes, with a low contrast between the thick and thin strokes as well as a generous x-height. The upshot of making all of these practical decisions is that the different choices of body text that you make will not provide big differences in your reader's mood, although they will still register in a subtle way.

If you do want to have a big effect on your reader, the opportunity is still there: headings and display text are your attention grabbers. They set the scene and draw people in. Visitors to the webpage will 'see' this type before they 'read' it, and that's your chance to choose a typeface that immediately expresses what the text, and indeed the entire website, stands for.

Think about the kinds of message the text should be conveying. Do you want the site to be more child-like or more professional and business-looking? Your typeface will impart an emotion to the reader. You might want them to feel excited, comforted, reassured or even tense. Consider typefaces with these emotions in mind.

All of us associate certain letterforms with topics, places and times, so identifying typefaces that have a relationship to your content or client can give a sense of place, evoke a mood or even reference a specific period in history.

Above all, experiment. Once you've found a good direction, make sure to try variations alongside your body copy to fine-tune your choice.

**Superfamilies**  
If you have chosen a body text font part of a superfamily, you could save time and look straight away to using the display styles within that family, knowing that the two fonts will sit together well.



**Mikey Allan**  
*Senior designer, Clearleft*  
"Choosing the right typeface is vital in creating an appropriate mood and emotion for your design. Setting type at display sizes lets you set up instant context before your site visitor has even begun to read."

“*Typography does not just convey information. It also imparts feeling, emotion and sentiment*”

## 5 Questions you need to ask before choosing a font

### WHAT KIND OF MESSAGE SHOULD YOUR TEXT CONVEY?

The font choice can set the tone of the text. Consider what is appropriate for what you want to do. For example, do you want a child-like enthusiasm? Formal business-like tone? Cutting-edge tech style? A hipster and craft feel? Futuristic design? Retro look? A sensible and secure study? A fun and informal composition? Or an authoritarian and trustworthy concept?

### HOW DO YOU WANT YOUR READER TO FEEL?

Your typeface will impart all kinds of different emotion to the reader. You might want them to feel excited, comforted, reassured, surprised, respectful, intrigued or even tense. Think carefully about the feeling that you want to convey.

### WHAT TIME OR PLACE DO YOU WANT TO INVOKE?

All typefaces come with the baggage of history. If the text is pertinent to a particular point in time such as the Twenties or something a bit more futuristic, or hints at a distant location such as Mexico or Scotland, your font could hint at this.

### WHAT FEATURES DO YOU NEED THE FONT TO HAVE?

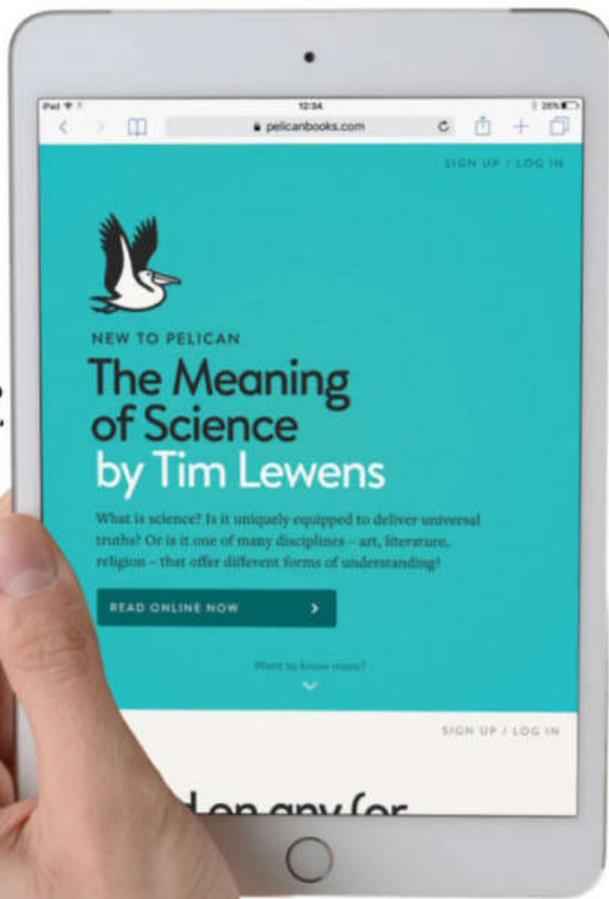
Many fonts come packed with OpenType features such as swashes, ligatures and alternative characters. These features can enhance your design so whittle down your shortlist accordingly.

### HOW MUCH DOES IT COST AND IS IT AVAILABLE AS A WEB FONT FOR YOUR PROJECT?

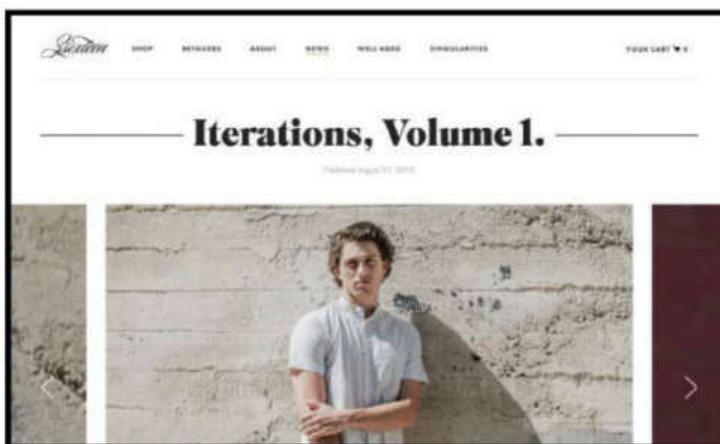
Some fonts are free and some are expensive. Do you have a budget? Not all fonts are available as web fonts yet, and some only through a service, which can be a limiting factor.

# Beautiful typography

FIVE OF THE BEST EXAMPLES OF EFFECTIVE EXPRESSIVE TYPOGRAPHY



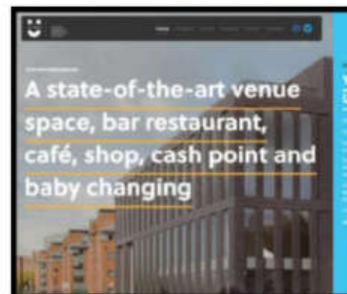
**PELICAN BOOKS**  
pelicanbooks.com  
Online and paper text designed as one.



**3SIXTEEN**  
3sixteen.com  
Classic combination of expressive display font and hard-working geometric sans for the navigation and body copy, lending a high-quality feel.



**HOW YOUR BODY RESPONDS WHEN YOU QUIT SMOKING**  
roykesluttgevinster.helsenorge.no/en  
Brilliant single-page site with subtle animation and perfect typesetting.



**STUDENTS' UNION, MANCHESTER METROPOLITAN UNIVERSITY**  
mmunionbuild.co.uk  
A rich, interactive user experience that is not afraid to make the typography the star.

## Set yourself apart

### YOUR TYPEFACE CHOICE AND HOW YOU USE IT HELPS YOU TO BE UNIQUE

Just as we judge someone based on the clothes they are wearing, we make judgements about text based on the typeface in which it is set. Choosing the same typeface as everyone else, especially if you're trying to make an impact, is like turning up to a party in the same dress or to a meeting in the same suit, shirt and tie.

We've talked about the psychological effect a typeface can have. When choosing a font for your display text, you also need to think about the picture it will paint. You should consider large type in the same way you might a photograph: there's a visual impact that comes before the actual words, which can anchor your layout as well as set the mood.

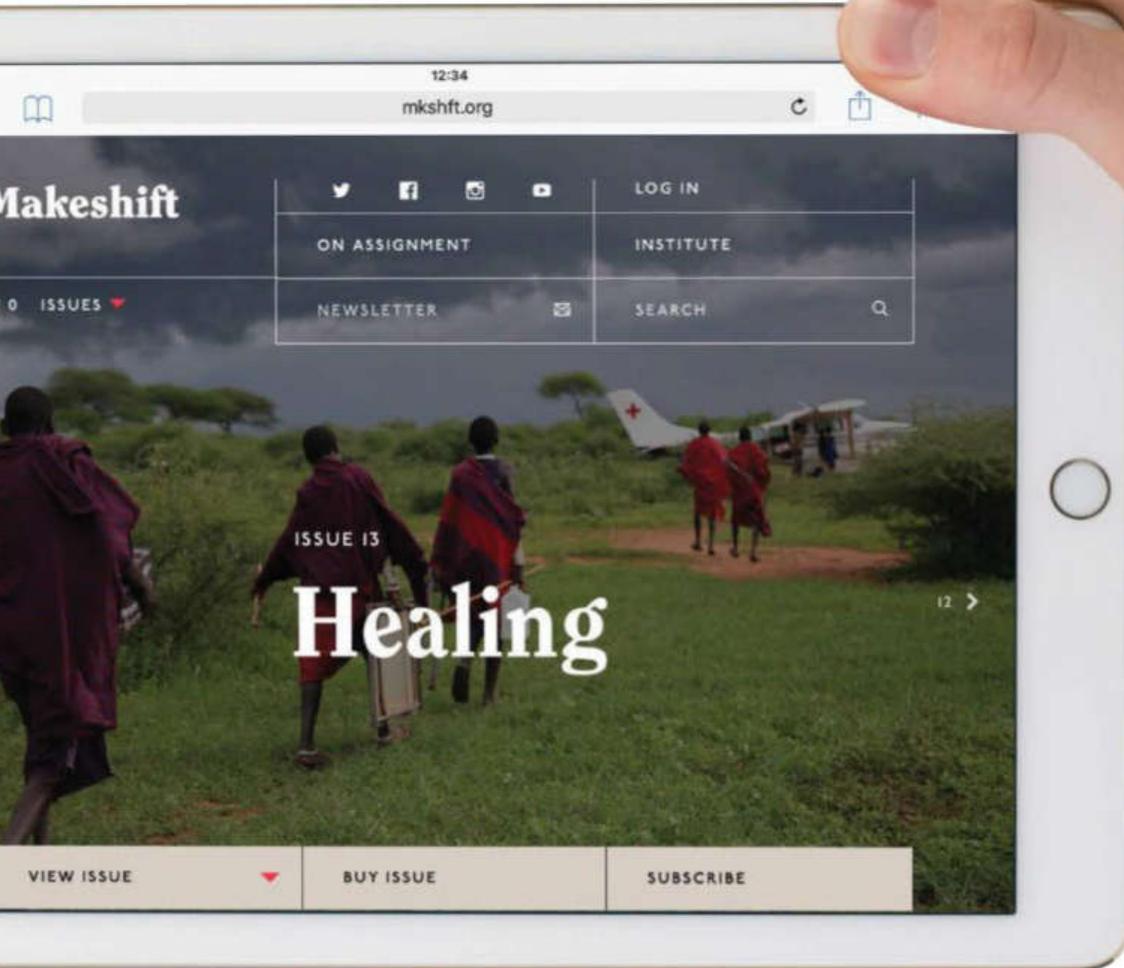
The type designer Christian Schwartz says there are two kinds of display typefaces. The first kind are the workhorse typefaces that will do whatever you want them to do. Helvetica, Proxima Nova and Futura are good examples. These fonts can be shaped in many different ways, but this also means they are found everywhere and take great skill and practise to work with in a unique and striking manner.

In order to make an individual statement with this kind of font, you'll need to pay extra attention to the details. Make judicious use of colour, choose an extreme weight such as very light or very heavy, or an extreme width such as expanded and condensed. Carefully adjust letter

spacing and line height to create an eye-catching and immaculately typeset 'picture' with the words.

The second kind of typeface is one that does most of the work for you. Like finely tailored clothing, it's the detail in the design that adds interest. Good examples are Clerkenwell, Marr Sans and Bree. These typefaces carry much more inherent character, but are also less malleable. It's harder to adapt them to different contexts. Both kinds of typefaces have their place, but it's good to be aware of what you're using.

Look for typefaces designed specifically for display use. Sometimes these will be obvious, like Strangelove, a very narrow handwriting font which can only be used in big sizes. Others will come as part of larger font families, so-called 'superfamilies'. It's worth noting that very condensed styles in superfamilies have the advantage of allowing more text to be squeezed in, and so can be set particularly big for added impact.



## MAKESHIFT MAGAZINE

mkshft.org

Lovely balance of impactful display type and beautifully set body copy. Matches the printed magazine perfectly, not by copying, but by adapting the design to the web.

### Does size matter?

#### WHAT ABOUT RATIO TOO?

When considering display text, we've been talking about text that makes an impact - big text. When deciding precisely how big that text should be, you should consider a scale. A scale provides consistency by way of a mathematical relationship between different design aspects, between body text and title text for example.

A scale you could use is the golden ratio, where each potential type size is 1.618 times bigger than the other, giving a sequence of type sizes like this:

**16, 26, 42, 68, 110**

One scale does not serve all screen sizes. The golden ratio has significant jumps between the text size and so works well for large screens. For smaller screens, where your biggest text cannot be anywhere near as big as for a large screen, you need a smaller scale as found in the classic typographer's scale:

**16, 18, 21, 24, 36**

**“More sophisticated type families will have specific ‘display’ styles. These are often variations on the body text”**

More sophisticated type families will have specific ‘display’ styles. These are often variations on the body text, especially adjusted for setting at large sizes. For example, closely comparing Benton Modern RE with Benton Modern Display reveals that the contrast (difference between thick and thin strokes) is increased, as is the size difference between lower and uppercase letters, both typical attributes of display styles.

The most expressive display styles exaggerate design features of body text. Questa Grande beautifully enhances the fine curves, flicks and curls hinted at in the text styles. The process of choosing a display font can be great fun. Make yourself a typographic prototype by first deciding on a font for your body text and making a

simple webpage to which you can add your display text and start playing with different typefaces. Fontdeck and most other webfont services let you try out fonts for free, and some font foundries such as Dalton Maag have trial licenses.

#### Explore type foundry websites

If you find a typeface you love, see what else that foundry or designer has created. Foundry websites usually have wonderful examples of their typefaces in action which you can use for inspiration.

The best place to get your inspiration is where fonts are actually being used. Screenshot nicely designed websites ([typ.io](http://typ.io)), tear out pages of magazines, visit design review sites (like [fontsinuse.com](http://fontsinuse.com)) and read typography blogs ([ilovetypography.com](http://ilovetypography.com)). Identify graphic and web designers you like and try adopting their palettes. Also look at the font choices and how they are used.

Spend time on type foundry websites. They are often great sources of beautiful and expressive typography,

as they are trying their best to show off their fonts in the ways that they were designed for. If there's a typeface you particularly like, find other typefaces by that designer. You may find that their other typefaces work for what you want to do too.

Above all, be expressive with your type. All type can have an affect on the reader, so take advantage of that and allow your type to have its own vernacular and impact. Don't be too reverential, dogmatic, or ordinary. Be brave and push a few boundaries.



**Tim Brown**

@nicewebtype

Tim keeps his ear to the ground for all the latest developments in web typography and is one of the most knowledgeable people around.

## How designers and non-designers see fonts

It's easy to forget that fonts mean different things to different people. Sarah Hyndman's online Font Census asked participants whether they had professional experience or not. The difference between the answers from the pros and the consumer is fascinating. It's also well worth remembering when choosing a font for a project. Here are a few quick examples:

**FONT**

Helvetica

**DESIGNER**

"Intellectual", "intelligent", "stylish".

**NON-DESIGNER**

"Everyman", "meh", "dull".

**FONT**

Bauhaus

**DESIGNER**

"Architecture", "art movement", "technical".

**NON-DESIGNER**

"Silly", "friendly", "doughnuts".

**FONT**

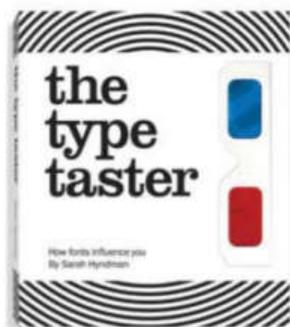
Gill Sans

**DESIGNER**

"Simple and elegant", "classic design", "clean, crisp, classic".

**NON-DESIGNER**

"Boring", "ordinary", "honest".



**EXPERT**

Sarah is a graphic designer with over 20 years experience and the author of *The Type Taster: How fonts influence you*.

Source: *The Type Taster: How fonts influence you* by Sarah Hyndman ([typetastingnews.com/book](http://typetastingnews.com/book))



# Getting technical

CSS OFFERS FINE CONTROL OVER TYPOGRAPHY WITH WIDESPREAD BROWSER SUPPORT. USE THIS TO YOUR ADVANTAGE TO FURTHER SET YOUR TYPE APART

Typography is about sweating the small details. These tend to be subtle, invisible and seemingly trivial in isolation, but together make a typographic picture greater than the sum of the parts.

Firstly, make sure kerning is turned on. This uses the instructions in the font to automatically close up the gaps between letters such as 'W' and 'e' in the word 'we'.

**text-rendering:** optimizeLegibility;  
**font-kerning:** auto;

Next check the spacing between your letters. If you are using sentence case you can normally tighten the spacing a bit. It's generally best to avoid loosening the spacing with lowercase as it affects legibility.

**letter-spacing:** -0.02em;

Conversely if you are setting display text in capitals, then increase the letter-spacing by five to ten per cent.

**letter-spacing:** 0.05em;

True responsive design allows for fluid layouts, where lines of text vary. However computers acting this way don't have a sense of what's good or bad - they can't make informed typographic decisions. Normally the rules you provide in CSS will enable you to get body text set comfortably, however short passages of text provided for impact will ideally require a human hand.

Consider line breaks and the shape of your text. A simple guideline is to alternate shorter and longer line lengths. If you know in advance what the words will be then you can stick in some judicious line breaks, but check that the layout doesn't break in your responsive design. If so you may need to add a breakpoint specifically for that heading.

A useful catch-all (particularly if the words are coming unknown from a database) is to automatically insert a nonbreaking space between the final two words of a

heading. This will prevent an unsightly word sitting alone at the bottom of the heading.

Pay attention to your line spacing. Display text can be set much closer than body text. Start by setting 'solid':

**line-height:** 1;

If you're certain precisely which words will appear on which line, you can try setting even tighter. There is a rule saying descenders and ascenders must never touch. There is an exception to this rule: touching is allowed if it looks better.

**"Even the most carefully planned design will fall short of perfection unless unremitting attention is paid to the details"**

Letterspacing tightened and line-height reduced to improve appearance of text set large

# The personality of a font

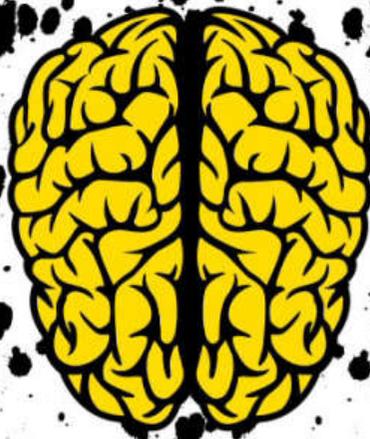
GRAPHIC DESIGNER SARAH HYNDMAN SPECIALISES IN EXPLORING HOW FONTS ARE PERCEIVED BY CONSUMERS. SHE REVEALS THE DIFFERENT PERSONALITY TYPES, VALUES AND STYLE ATTRIBUTED TO CERTAIN FONTS

Helvetica

Comic Sans

**PERSONALITY**  
Everyman, idealist, leader  
**VALUES**  
Conventional, confident, modern  
**STYLE**  
Neutral, credible, calm

**PERSONALITY**  
Comedian, everyman, storyteller  
**VALUES**  
Friendly, welcoming, loud  
**STYLE**  
Novelty, quick'n' easy, comfortable



Baskerville

Futura

**PERSONALITY**  
Intellectual, academic, wise  
**VALUES**  
Traditional, conventional, trustworthy  
**STYLE**  
Neutral, credible, knowledgeable

**PERSONALITY**  
Leader, idealist, thinker  
**VALUES**  
Modern, confident, capable  
**STYLE**  
Neutral, practical, comfortable

**How to influence people**

To really connect with an audience, consider who they are. You need to speak to them in the right tone. Don't pick a kid-like font (Comic Sans) for a business site.

Source: *The Type Taster: How fonts influence you* by Sarah Hyndman ([typetastingnews.com/book](http://typetastingnews.com/book))

## 10 Best free fonts

OUR PICK OF THE FONTS THAT DON'T COST A THING

**QUESTA GRANDE**  
[thequestaproject.com/](http://thequestaproject.com/)

**ABRIL FATFACE**  
[bit.ly/1h3cnIO](http://bit.ly/1h3cnIO)

**OVERPASS**  
[overpassfont.org](http://overpassfont.org)

**SALOME**  
[salomefont.com](http://salomefont.com)

**PLAYFAIR DISPLAY**  
[bit.ly/1OcM67k](http://bit.ly/1OcM67k)

**BORN**  
[carlosdetoro.com/born/](http://carlosdetoro.com/born/)

**RALEWAY**  
[bit.ly/1XKWw2e](http://bit.ly/1XKWw2e)

**OSTRICH SANS**  
[bit.ly/1UGXDeT](http://bit.ly/1UGXDeT)

**MADRAS**  
[bit.ly/1Mb4UnW](http://bit.ly/1Mb4UnW)

**VOGA**  
[bit.ly/1iwMjWQ](http://bit.ly/1iwMjWQ)

## 10 Best paid-for fonts

OR CHECK OUT THESE IF YOU HAVE A BIT OF CASH

**FS CLERKENWELL**  
[bit.ly/1VoKd7Q](http://bit.ly/1VoKd7Q)

**MARR SANS**  
[bit.ly/1EUGgFA](http://bit.ly/1EUGgFA)

**OBSIDIAN**  
[bit.ly/1OyDohL](http://bit.ly/1OyDohL)

**STRANGELOVE NEXT**  
[bit.ly/1EUGLJk](http://bit.ly/1EUGLJk)

**BENTON MODERN DISPLAY**  
[bit.ly/1hX2Nae](http://bit.ly/1hX2Nae)

**TORNAC**  
[bit.ly/1IYeW4q](http://bit.ly/1IYeW4q)

**BOOKMANIA**  
[bit.ly/1K97uc1](http://bit.ly/1K97uc1)

**INGEBORG**  
[bit.ly/1g9hENU](http://bit.ly/1g9hENU)

**MONOPOL**  
[bit.ly/1OcMBhL](http://bit.ly/1OcMBhL)

**CALYPSO E**  
[bit.ly/1NpE77M](http://bit.ly/1NpE77M)

# Thinking in an all-device world

TO MAKE THE MOST OF THE POWER OF THE WEB, YOUR TYPOGRAPHY SHOULD EMBRACE TRUE UNIVERSAL DESIGN

More and more web-enabled gadgets are entering the hands of readers on a daily basis. You should aspire to make your designs flexible and pliable for screens and devices of all shapes and sizes. Your design must adapt to the reading context, and the best way is through the methodology we know as responsive design.

There are two core principles to the technical side of responsive design. The first is liquid layouts. This means no fixed widths and allowing your text to reflow as needed. This is fine for paragraphs in body text but a trickier proposition for headings in display text.

The second principle is the use of media queries to add an extra layer of control and adjustment at the point the liquid layout breaks. This breakpoint usually occurs as the layout encounters bigger or smaller screens, but don't make the mistake of determining screen size as a way of deciding upon break points. Your media queries are there to help along the typography, so you should use a typographic assessment of when the design might break. This means setting your breakpoints in ems rather than pixels.

```
h1 { font-size: 2em; }
@media all and (min-width: 56em) {
h1 { font-size: 4rem; }
}
```

```
@media all and (min-width: 74em) {
h1 { font-size: 6rem; }
}
```

The above code increases the size of your h1 heading when more space is available to you, as determined by how much text can fit in. This will mean that the breakpoints take into account your reader's default text size - this may vary from device to device and can also be changed by users.

In that example, we set a very large text size (typically equivalent to 96px) for large screens. It's important to remember the enhanced experience we can give to those with equipment at the other end of the spectrum.

It's also vital to acknowledge that devices and browser windows come in all shapes and sizes. A device such as the Hudl with a 16:9 screen has a very shallow height when held in landscape mode. This will mean that the use of very large headings delivered by an assessment of width may look out of proportion, so you will need to add breakpoints in the vertical plane as well, for example like this:

```
@media all and (min-width: 74em)
and (min-height: 46em) {
h1 { font-size: 6rem; }
}
```



Ampersandconf.com uses media queries and vw units to adapt the heading size

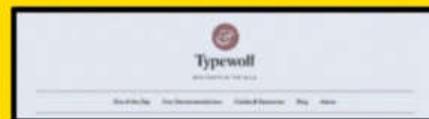
## 5 tools

SITES FOR DISCOVERING AND PLAYING WITH TYPE



### FONTS IN USE [fontsinuse.com](http://fontsinuse.com)

A public archive of typography searchable by typeface, format and industry. Also includes commentary and reviews from founders Sam Berlow, Stephen Coles and Nick Sherman.



### TYPEWOLF [typewolf.com](http://typewolf.com)

A comprehensive resource curated by Jeremiah Shoaf. Includes a site of the day (always good) and is searchable by typeface.



### WHATFONT [chengyinliu.com/whatfont.html](http://chengyinliu.com/whatfont.html)

This is a bookmarklet and browser extension to identify any web font on a live website. Very handy indeed.



### ON WEB TYPOGRAPHY [abookapart.com](http://abookapart.com)

Jason Santa Maria's excellent book, *On Web Typography*, is all about how to apply classical typography principles to the web.



### AMPERSAND CONFERENCE [ampersandconf.com](http://ampersandconf.com)

A fun, practical one-day conference in Brighton dedicated entirely to web typography. Great at covering a diverse amount of topics, ranging from type design to web font performance.

**Remember how people read**  
People read different kinds of devices in different modes - at a desk, on the sofa, in bed or standing on a train. Take this into account when considering sizes.



# OpenType features

OPENTYPE WAS CONCEIVED THE SAME YEAR AS CSS AND NOW PROVIDES A WORLD OF TYPOGRAPHIC POSSIBILITIES

Many typefaces are designed with hidden gems enabling you to be even more creative in your type setting. These hidden gems are powered by a technology called OpenType which bundles optional letterforms such as ligatures, swashes and alternates within the font files.

Swashes in particular can add a sophistication to your text. Swashes add a typographic flourish, by way of a flamboyant addition to a character, such as an exaggerated serif, tail or entry stroke.

You can turn on swashes in CSS by using:  
`-webkit-font-feature-settings: "swsh" 1;`  
`font-feature-settings: "swsh" 1;`

Other OpenType features to play with include discretionary ligatures, for example an 's' connected to a 't' with a loop to give a high-class or historic feel.

`-webkit-font-feature-settings: "dlig" 1;`  
`font-feature-settings: "dlig" 1;`

You can play with more OpenType features at [clagnut.com/sandbox/css3](http://clagnut.com/sandbox/css3).



## Maintaining word wrap

**TRULY RESPONSIVE TYPOGRAPHY**  
 Viewport units let you specify length and size in terms of the size of the viewport. The units are vw, vh, vmin and vmax, where a value of one is equal to one per cent of the viewport width or height.

This means that you can set your font size in terms of viewport size, so on wider windows your text is proportionally bigger. So if you have a heading you want to wrap precisely over two lines, you can set the font size with vw units and it should wrap at the same point.

`font-size: 5vw`

You'll need to experiment with the font size until you get it right, and ensure that the text doesn't look too small or big.

# How we created the cover font

WEB DESIGNER'S SENIOR DESIGNER BENJAMIN STANLEY REVEALS HIS SECRETS TO CREATING THE FONT ON THIS ISSUE'S COVER

## STEP 1

### What materials do you need?

To achieve the same style of font we have created you will need to pick up a large permanent marker. Alternatively, you can grab a few different types of marker as this will help you create your own custom font. Oh, and don't forget a pad of plain paper.

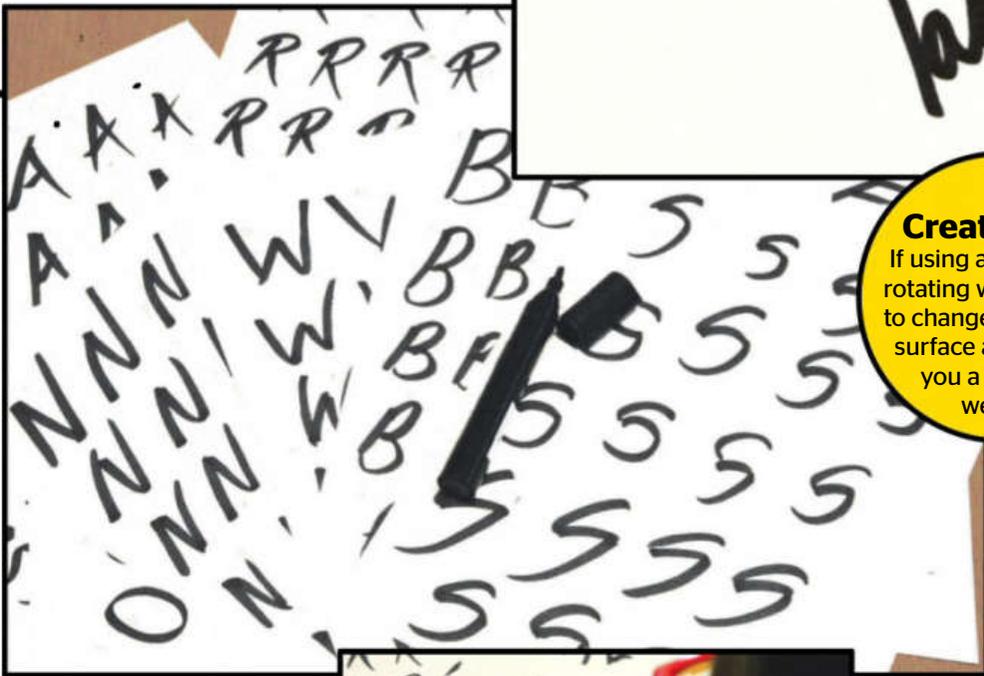
**Creative Tip**  
Keep an eye out for the latest trends to make sure you create something that is current and in vogue.



## STEP 2

### Be inspired

To get the creative juices flowing, it's a great idea to have a look around the web and put together a moodboard of all your favourite styles and inspiration. A great place to start is [Niice.com](http://Niice.com).



**Creative Tip**  
If using a marker, try rotating while writing to change the marker surface area, giving you a different weight.

## STEP 3

### Let the fun begin

With your ideas ready it's time to jump straight into the drawing. Don't be afraid to make a mistake at this stage because the key to this is repetition. As you can see, we didn't exactly achieve the perfect font on our first attempt. We recommend that you try writing each letter at least twenty times and make sure that you aren't too precious with each attempt as it's the various imperfections and details that give this font its flavour! If you want to create your own useable font set, then you will need to make sure that you create each character as well as whatever symbols you want.

## STEP 4

### Time to choose

By now you should have a bucket load of drawn-on papers. It's time to look through each sheet and mark the variations that appeal to you. Put these to the side ready for the next step.



## STEP 5

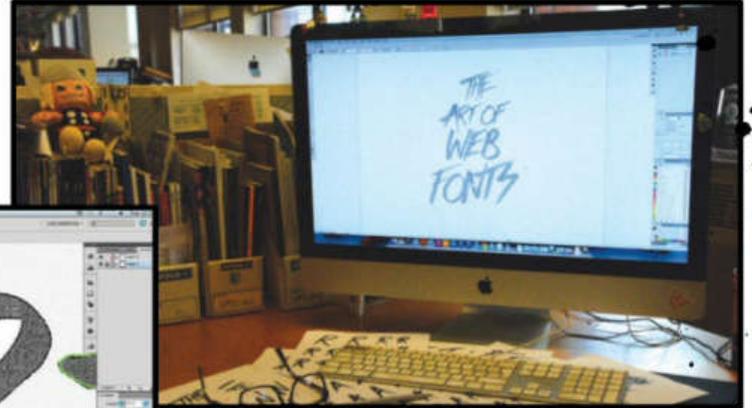
### Start scanning

You're going to need access to a scanner for this step. Take all your favourites and scan them onto your computer, and don't worry about the quality of the scanner you use as in the next step we will be taking the scans into Adobe Illustrator. Save scans as PDF or JPG.

## STEP 6

### Mock up

It's not imperative but before re-creating a font in Illustrator it's a good idea to mock up the final text layout by putting all the PDFs together. This will make sure that the letters fit together and that you are happy with what the final product would look like.



## STEP 7

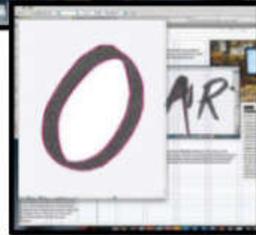
### Fire up Illustrator

With the font design finished it's time to start importing the PDFs/JPGs to Illustrator. Place a letter on the artboard and in the Layers section lock the layer and create a new layer over the top of the existing one. Now it's time to start using the Pen tool. If you're not familiar with this, go ahead and press P (which is the shortcut for the Pen tool) and simply start tracing the letter underneath. The Pen tool can be a little tricky at first but it's easy once you have had a go with it.

## STEP 8

### Pathfinder tool

So before we move on, we first need to make sure we have cut out all our letters. For example, as you can see we have created an 'O' with the Pen tool, but what happens when we try to use the fill colour at this point? Well we have a problem with the letter being completely filled with colour. To stop this from happening we need to use the Pathfinder tool which should be on the left toolbar (if not don't worry, you can add it by clicking the Window menu in the top toolbar and then clicking the Pathfinder option). You need to make sure that the inner circle of the 'O' is above the larger, outer line (to be safe you can grab the inner circle and once selected, right-click, select arrange and bring it to the front). You are then going to need to select the whole letter, click the Pathfinder tool in the menu and select the second option from the left on the top line 'Minus Front'. We have now cut out the middle of the shape!



## STEP 9

### Colour and arrange

We are going to fill our text with yellow but you can use any colour you like, just make sure that the stroke colour is blank. Once this is done, arrange the text however you want and save the file as an AI file. Alternatively, save as an SVG.

## STEP 10

### From Illustrator to font

The alphabet created for the cover was the final stage for the magazine cover. However, there is the option to turn your creations into a true font. Glyphs ([glyphsapp.com](http://glyphsapp.com)) is a good tool for creating your own font. Designers can convert their Illustrator designs or alternatively create inside the app. Check out the Glyph tutorials and [helloworld.com/blog/font-tutorial](http://helloworld.com/blog/font-tutorial) for more information.

*“Before re-creating a font in Illustrator it's a good idea to mock up the final text layout”*



# Animate typography and text effects

Give your typography the attention it deserves with these must-see animated effects with CSS3





One of the biggest evolutions with CSS3 has been the ability to write behaviours for transitions and animations. These animated effects are a must-know for any

designer or front-end developer as they unlock all kinds of interactive possibilities and visual feedback options.

In this tutorial the focus is on text with three different effects that offer some great possibilities. The first actually will not use standard text on the page, but will instead create the text inside an SVG element. The reason for this is that SVG enables strokes on text which is not possible to do with regular HTML text, and sometimes you may just need strokes with text. Using the SVG right in your HTML will keep your text accessible and will stop you having to rely on GIFs. Once the stroke is in place, it will be given five different colours and set to march around the text with animation. The next text effect shows how to make a text rotator so that different words can be cycled through on the screen. The final effect will use text clip to clip the image to the text so that the image only shows inside the text. This will be turned into a call-to-action button with a sliding image effect.

## 1. Set up the document

Open the project folder in Brackets or a similar code editor and then open start.html. Create style tags in the head section and add the CSS shown. This will import the right typeface that will be used from Google and sets up the basic HTML settings for the pages.

```
@import url(http://fonts.googleapis.com/
css?family=Oswald:400,700);
html, body {
height: 100%;
font-weight: 800;
}
body {
```

```
background: #35483e;
background-image: url(img/bg.jpg);
background-size: cover;
font-family: Arial;
}
```

## 2. Write an SVG graphic

As SVG graphics are written with tags they can be easily authored without any graphics application. Move to the body tag and add the start of this SVG graphic, which creates text to display in the browser. Later this will get styling from the CSS that will animate this.

```
<svg viewBox="0 0 960 300">
<symbol id="s-text">
<text text-anchor="middle" x="50%"
y="80%">Kinetic Design</text>
</symbol>
```

## 3. Create graphic lines

The next code that is added finishes off the SVG, more importantly though it creates five graphics nodes that will be styled using CSS to create five different coloured strokes. These target the text that was created in Step 2.

```
<g class="g-ants">
<use xlink:href="#s-text" class="text-copy"></use>
</g>
</svg>
```

## 4. Add the CSS for the SVG

Move back to the CSS section of the page and add the rule for the SVG. This will display the object as a block element so that it can be centred on the page with the margin set to auto. The font for this element is set to Oswald and a large text size.

## 5. Style specific text

Now the CSS is targeting the specifics of the text and the fill is turned off while a white stroke is added to the text. The stroke isn't applied all the way around the text by using the dash array. The stroke is widened and told to take five seconds to apply the animation.

## 6. Start the animation

By adding keyframes the stroke will immediately start animating around the edge of the text. Now each graphic element is given colour and a slight delay in its movement to create the basis for the rotating stroke around the outside. At present there are orange and dark red strokes.

```
@keyframes stroke-offset {
100% { stroke-dashoffset: -35%;}
}
.text-copy:nth-child(1) {
stroke: #5c0404;
animation-delay: -1s;
```

## CSS keyframes

The CSS keyframes rule enables the designer to specify either 'from' or 'to' values, or alternatively it enables them to use a percentage that states what should happen.



### Left

The next text elements are added to the HTML and given some basic styling for us to place the text under the animated heading

### Top left

The SVG element is added to the page, and basic CSS styling places this in the correct position on the page

### Top right

The fill colour is removed and a stroke is added that is not shown all around the edge of the text elements, which is still an interesting look

## Tutorials

# Animate typography and text effects

```
}  
.text-copy:nth-child(2) {  
stroke: #d6801c;  
animation-delay: -2s;  
}
```

### 7. Finish the stroke

As in the previous step, the CSS here is targeting the different children of the graphics object and they are given different colours and offset in their own animation. This now gives the effect of five different colours marching around the edge of the text.

```
.text-copy:nth-child(4) {  
stroke: #ffff9e;  
animation-delay: -4s;  
}  
.text-copy:nth-child(5) {  
stroke: #55981b;  
animation-delay: -5s;  
}  
@keyframes stroke-offset {  
100% { stroke-dashoffset: -35%;}  
}
```

### 8. Second effect

That completes the first effect that is being added to text, so now move down to the body tag and add our code from FileSilo to the SVG added earlier. This readies the

setup of a text rotator that will move through the different list elements with animation, great for showing off a range of skills.

### 9. Style up the text

With the next content in place, move back to the CSS style tags and our code on FileSilo places the text in the centre of the page under the animated heading created earlier. At the moment this still looks like a list, but that will all change as more CSS is added to complete the effect.

### 10. Static section

The text is made to float left, where one half of the text is static, ie not moving, hence the name of the class that is controlling it here. Once floated to the left, the overflow is hidden. The height is set up so that only one line of the moving section can be seen.

```
.static {  
float: left;  
overflow: hidden;  
height: 40px;  
}
```

### 11. Paragraph style

The paragraph tag is targeted and given a light yellow colour that has also been used in one of the strokes around the edge of the previous text, just to keep consistency with the colours. Again this text is floated to the left so that the list can sit alongside it.

```
p {  
display: inline;  
float: left;  
margin: 0;  
color: #ffff9e;  
}
```

### 12. Set the unordered list

Now with this rule targeting the unordered list, you will notice that the text for the first element is sitting alongside the static text. The other list elements are below this but because the overflow is cut, it isn't being displayed until the animation is added.

```
ul {  
margin-top: 0;  
padding-left: 130px;  
text-align: left;  
list-style: none;  
animation: 6s linear 0s normal none infinite change;  
}
```

### 13. Size up the height

Styling up the list elements applies the right colour for these elements and more importantly sets the line height so that the text moves to the right section and can only see that section at any one given time. If the line height was smaller it might be possible to see parts of the other text on the screen.

### 14. Make it move

The final setup for the CSS part is to make it move by defining the keyframes called 'change'. Step 12 calls for these keyframes and adding these will immediately start the text rotator sliding up and down to show the text. Because the animation was set to infinite, this will just keep looping.

```
@keyframes change {  
0% { margin-top: 0; }  
15% { margin-top: 0; }  
25% { margin-top: -40px; }  
40% { margin-top: -40px; }  
50% { margin-top: -80px; }
```

## Naming keyframes

Notice that the keyframes in Steps 14 and 6 have been given a unique name so that they can be called by the right piece of animation.



#### Top left

Keyframes are added to the animation and each list element is cycled through by sliding down to the next and back up again. The text is now about to slide up

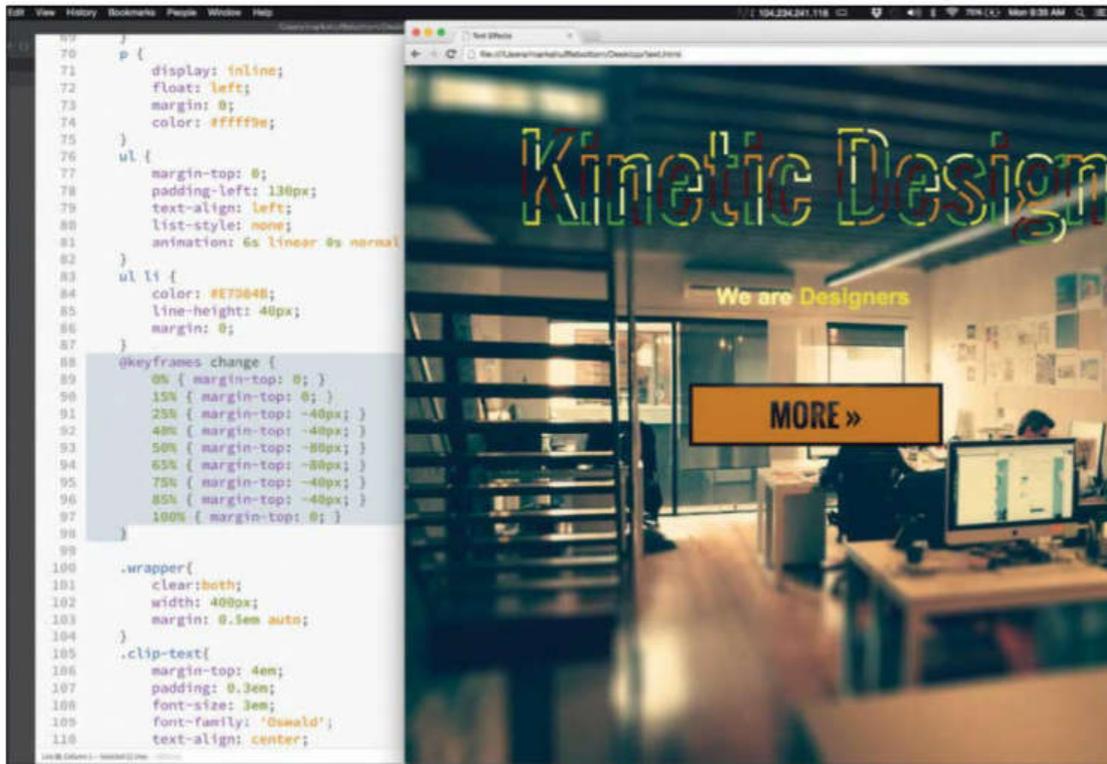
#### Top right

A 'more' button is being styled up and the background image is only visible through the text. The image will animate when the user rolls over

#### Right

At this stage this image rollover is working. The colour is different from the previous step, but it needs to stand out and look more like a call-to-action button



**CSS animation**

To take advantage of the CSS animation, instead of relying on JavaScript, it is important to understand exactly what is going on. Transitions provide a change from one state to another, while animations can set multiple keyframes of transition.

Transitions must have a change in state, and you can do this with :hover, :focus, :active and :target pseudo-classes. The most popular is hover as this provides rollover changes. There are four transition related uses, transition-property, transition-duration, transition-timing-function and transition-delay.

Animations set multiple keyframes that tell an element what change they should undergo with @keyframes and called by the animation using it. Only individual properties may be animated.

```
65% { margin-top: -80px; }
75% { margin-top: -40px; }
85% { margin-top: -40px; }
100% { margin-top: 0; }
```

**15. Call to action**

That completes the second animation that we are exploring. Now it's time to add the final animation, which will be for an animated rollover button, using a newer CSS command: clip text. In the body add the HTML from FileSilo below the other content that is on the page.

**16. Centre the box**

The first part of this is simply to centre the box and for us to clear the floated elements in the content above. This box is going to be quite small on the screen so it is being made to be 400 pixels wide. The auto margin centres the div box on the screen.

```
.wrapper{
clear:both;
width: 400px;
margin: 0.5em auto;}
```

**17. Start the clipping**

The next rule will set up the clipping of the text. Firstly the right typeface is applied to this and the type is given quite a prominent size of 3ems. The text is centred with the block and some margin and padding sets this up nicely on the screen.

```
.clip-text{
margin-top: 4em;
padding: 0.3em;
```

```
font-size: 3em;
font-family: 'Oswald';
text-align: center;
position: relative;
display: block;
```

**18. Apply the image**

Now for the real nuts and bolts of the process. Here the clip-text rule is continued and the background image is set to display, however instead of it being in the background like normal, the text is set to clip it. This means that the background only appears inside the text. background-image: url(img/text-bg.jpg); background-position: bottom; background-size: cover; -webkit-background-clip: text; -webkit-text-fill-color: transparent; transition: 2s ease all; }

**19. Rollover effect**

Adding the code here will set the rollover for the text and the background image. The image will be set to be positioned at the top in the background. Previously it was set to the bottom so the text will have the image slide through the text as the user rolls over it with the mouse. .clip-text:hover, .clip-text:hover::before { background-position:top; } .clip-text:before, .clip-text:after { position: absolute; content: '';

**20. Create a border**

This code is the first step in creating a border around the text. This is achieved by placing the image behind the text. The downside at this point is that the text is invisible as the image is there. The final step will correct this.

```
.clip-text:before {
z-index: -2;
top: 0;
right: 0;
bottom: 0;
left: 0;
background-image: inherit;
background-position: bottom;
background-size: cover;
transition: 2s ease all;
}
```

**21. Clip the image**

The final part is to place a semitransparent background colour behind the text and to give this a slightly smaller size than the box. The result is that the text and border now both clip the image so that it is only visible where they are. Save this now and test it in the browser.

```
.clip-text:after {
position: absolute;
z-index: -1;
top: .125em;
right: .125em;
bottom: .125em;
left: .125em;
background-color: rgba(214, 128, 28, 0.9);
}
```

# web workshop

# Animate an SVG with HTML and CSS

As seen on [cameronsworld.net](http://cameronsworld.net)

## Slow scrolling

When you first get to the site you may find yourself a little overwhelmed. We suggest taking it one animated item at a time.

## Multiple themes

Although it may at first seem like a tribute site to sci-fi, scrolling down reveals that it is actually a tribute to everything.

## Retro stylings

Cameron's World is basically a love letter to the internet's infancy, piled to the brim with animated GIFs.

## GIF collection

Scattered throughout Cameron's World is probably the largest collection of animated GIFs in the universe.

## GeoCities nostalgia

It was one of the first places for building homepages, that's why so many GeoCities assets have been collected here.

**E**verybody loves a bit of retro, right? Nostalgia is as inherent to the human race as innovation and now, some 25 years after the invention of the World Wide Web, the internet is old enough to be able to look back fondly on its own infancy. One such website throwing its eyes back with unabashed fondness is Cameron's World. Anyone familiar with Nineties web browsing will recognise the bright lights, garish colours, autoplay music and practically no design ethic, all of which made us gasp with awe only 20 years ago. Some will see this site and smile fondly, yearning for simpler days. Others, of

course, will recoil in horror and wonder what the hell we were thinking.

So how about taking one of those quaint, charming animated GIFs and giving it the modern treatment? Let's bridge the gap between old and new by re-creating an animated GIF using SVG, HTML and CSS. Bearing in mind that this is a quick exercise and we don't have a wireframe 3D model of the USS Enterprise to hand, we're going to be picking one of the simpler GIFs to re-create.

See the alien, bottom left of the screen on initial page load, just above the ironic coloured message? That's our guy. Make sure you get the full tutorial code on FileSilo.



## Animated changes

"Despite Cameron's obvious nostalgia for the animated GIF, advances in CSS animation, and SVG imagery coupled with JavaScript, have seen the GIF slowly go the way of Flash animation. These days you're more likely to see animated GIFs relegated to loading icons and little else."

**Richard Lamb, freelance web designer at Inspired Lamb Design**

**<comment>**  
What our experts think of the site

## EXPERT ADVICE Challenge yourself

As you can see, there is a plethora of animated GIFs in Cameron's World. For the purposes of this tutorial, we picked the relatively simple alien GIF, but we still took a while deciding and then still had to figure out how to translate a series of animated image layers into a working, code-based animation. Maybe you can go one better. Why not choose one of the more complex GIFs and see if you can re-create it using only HTML and CSS? Obviously, there will always be some that can't be mimicked to perfection in pure code, at least not yet, but sometimes great leaps in coding development come from having to work with existing tools, but within very narrow confines.

Besides, even if you're not about to usher in the next big web development, solving a seemingly pointless HTML puzzle like this can be an extremely useful method for keeping your brain agile and ensuring those coding skills stay honed. Remaining within your comfort zone, churning out the same template-based sites time and time again, is an easy trap to fall into. Sometimes it pays to challenge yourself and try your hand at what you think is beyond your skills. Maybe you'll surprise yourself with what you can achieve.

## Technique

### 1. Create your alien

First thing we need to do is make our alien in either Photoshop or Illustrator. Build him with two layers by making the head shape, the mouth and nose. The eyes will be created later on. Once you have this done, save your layers.

### 2. Create the SVG

There are numerous ways to do this step. You can create SVGs from your layers with the latest versions of Photoshop or if you are using Illustrator you can export your layers as SVGs directly. If you have neither of these you can use Inkscape, an open source software available for free. You should end up with an SVG for the head and one for the mouth and nose shapes.

### 3. Base HTML

Now we're going to begin putting together our index.html, placing a number of feature-named divs within a main container div. The two eye divs will have content created entirely in CSS.

### 4. Place your SVGs

Place the SVG code for the head shape inside the head div. You should have a grey shape but you can add a black stroke value to it for an outline. Then place the mouth and nose shape into the face div.

```
<div id="head">
<svg version="1.1" xmlns="http://www.w3.org/2000/svg" xmlns:xlink="http://www.w3.org/1999/xlink" width="682" height="643" viewBox="0 0 682 643">
<path style="fill:#707070" d="M
329.29383,595.34017 C 303.59048,589.84415
278.06846,571.34223 230.24763,523.53768
147.90032,441.21841 101.01898,368.99175
```

```
87.424155,303.5 c -7.385818,-35.58047
-5.677811,-66.79329 5.526856,-101 6.578432,-
20.08329 22.191729,-47.71784 38.032189,-
67.3146 30.93205,-38.267061 81.23502,-71.07202
131.41932,-85.704791 27.5954,-8.046286
48.45573,-10.899652 79.39131,-10.85949
28.27843,0.03671 41.98283,1.701767 68.8.261848
93.39828,23.549846 167.53312,94.419523
185.44818,177.280353 9.2316,42.6981
3.71539,85.70185 -17.16761,133.83668
-22.51033,51.88577 -69.35284,114.74745
-129.44543,173.7131 -54.55723,53.5341
-86.61074,70.62438 -119.33514,63.62707 z"
id="alienHead" stroke="#1f1f1f" stroke-
width="4" />
</path>
</svg>
```

### 5. Start adding CSS

The base CSS for the facial features is very simple. Float the head div left and then add the eyes and face divs with absolute positioning, plus a zero value top declaration. You will see your head and facial features shapes fit together, sort of. Now we need eyes.

### 6. Build the eyes

Both eyes are built purely in CSS and, apart from one difference, share the same basic values. With relative positioning and left float we can then slot them one next to the other.

```
.eye-left, .eye-right {
width: 200px;
height: 100px;
background: #1f1f1f;
border: 2px solid #1f1f1f;
border-radius: 100px / 50px;
position: relative;
top: 175px;
```

```
left: 140px;
float:left;
}
```

### 7. Position the eyes

We need to shape the eyes for a true alien effect, they're too human at present. Use the transform declaration to rotate them at opposite angles to each other. Don't forget to add vendor prefixes for browser compatibility.

### 8. Animate the eyes

In order to create the blinking effect, we are going to use the box-shadow value to 'fill' each eye with a darker grey colour and back again over three seconds. The keyframes are set at irregular intervals to create a slower end to the blink.

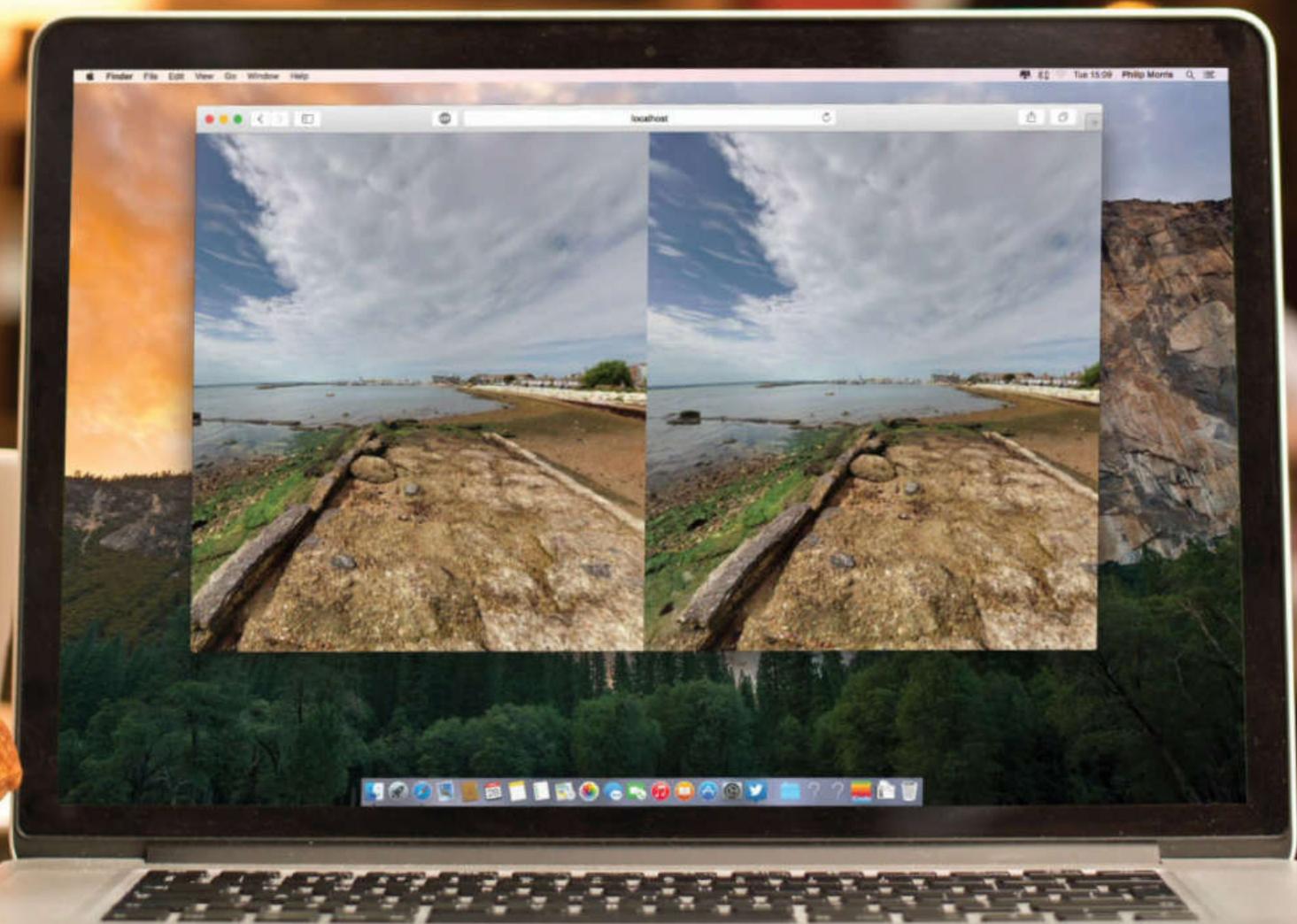
```
.eye-left, .eye-right {
animation: eye 3s ease-in-out infinite;
}
@keyframes eye {
0% {box-shadow: 0px 0px 0px 0px #585757 inset;}
2.38% {box-shadow: 0px 140px 0px 0px #585757 inset;}
34.13% {box-shadow: 0px 0px 0px 0px #585757 inset;}
36.51% {box-shadow: 0px 0px 0px 0px #585757 inset;}
100% {box-shadow: 0px 0px 0px 0px #585757 inset;}
}
```

### 9. Animate the head

Now we've re-created the original GIF, we're going to surpass it a little by adding an extra animation using the rotate value to tip the head slightly from side to side. This is optional, so you can even try putting in some values of your own devising!

# Create virtual reality panoramas

Bring an immersive VR experience to the browser and Google Cardboard with the help of three.js



**T**he web is for everyone, but sometimes technology arrives that creates a barrier to this. Virtual reality is one of those barriers. Unless you have a very expensive

device like an Oculus Rift or Samsung Gear you can't access VR content. However, if you have a smartphone then you can buy an inexpensive virtual reality viewer, like Google Cardboard, for the price of a film (between ten and twenty pounds).

These low-tech devices are little more than a cleverly constructed piece of cardboard with two lenses. They take the left and right images on a screen and trick your eyes into believing it's a single image. Its simple design means it's easy to replicate and cheap to manufacture.

You'll learn how to use three.js to create a 360-degree video panorama that the user can look around with a device and Google Cardboard - all within the browser! Much of the terminology we'll use comes from the videogames world. As we're using three.js, there's much more interactivity that you can add to this. It allows you to add any 3D object into the world, and using ray casting (to detect what the user is looking at) you could trigger interactions within it. We're going to keep it simple by introducing the basic concepts and provide a world for the user to look around and be immersed within.

## 1. Create index.html

Start by creating a blank page with a video element and a container. The video element's behaviour is controlled by attributes, in this case we've told it to play automatically and loop indefinitely. The more sources you provide, the greater the number of browsers that will be able to play it.

```
<div id="canvas"></div>
<video id="video" autoplay loop>
<source src="videos/panorama.mp4"
type="video/mp4"></source>
```

Your browser does not support the video element  
</video>

## 2. Reference script files

Much of the heavy lifting has been done for us in the form of three.js plugins. The official ones that we have made use of are StereoEffect, DeviceOrientationControls, OrbitControls. Lastly paper.js will glue all of it together.

```
<script src="https://cdnjs.cloudflare.com/
ajax/libs/three.js/r71/three.min.js"></
script>
<script src="js/third-party/threejs/
StereoEffect.js"></script>
<script src="js/third-party/threejs/
DeviceOrientationControls.js"></script>
<script src="js/third-party/threejs/
OrbitControls.js"></script>
<script src="js/paper.js"></script>
```

## 3. Create paper.js

Most three.js files have three lifecycle functions: init, render and animate. Within paper.js, we'll kick off by declaring some variables which will be accessed by more than one of these.

```
(function() {
'use strict';
var camera, scene, renderer;
var effect, controls;
var element, container;
var videoTexture, videoMesh;
})();
```

## 4. Clock and initialise

The clock is a simple but extremely handy utility. This is useful for us because when animating or moving around,

we need to know how fast to animate and how much time has passed since the app started or was last called.

```
var clock = new THREE.Clock();
init();
```

## 5. Start initialising scene

The renderer is the heart of outputting pixels to the page. The element is the DOM element of the Canvas. The scene is the space that everything is put into. Just like a movie, digital scenes contain objects, lights and cameras.

```
function init() {
renderer = new THREE.WebGLRenderer();
element = renderer.domElement;
container = document.
getElementById('canvas');
container.appendChild(element);
scene = new THREE.Scene();
}
```

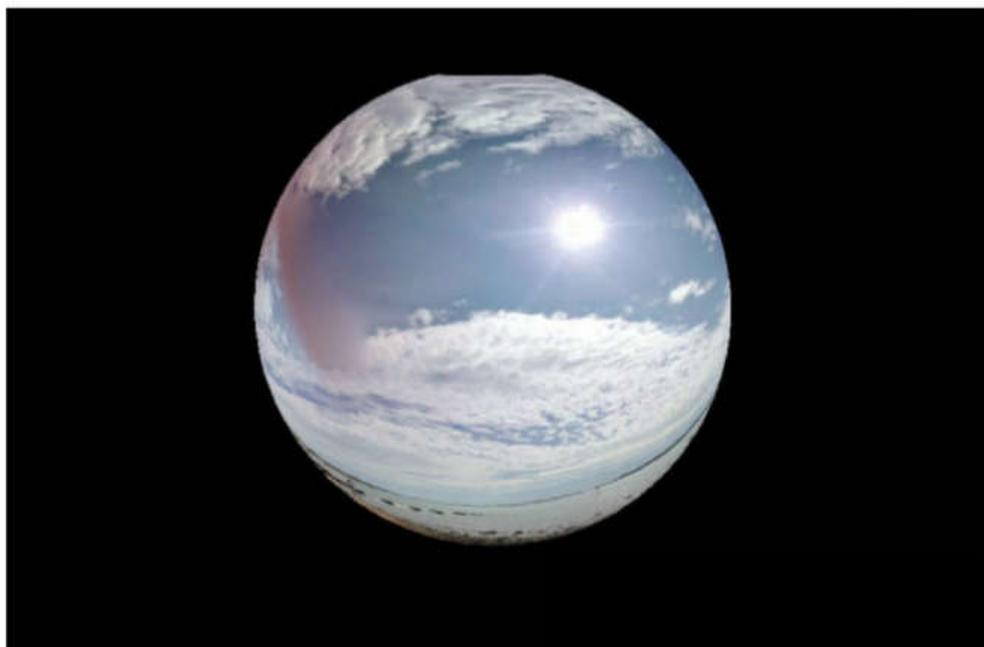
## 6. Create sphere geometry

For the panorama, create a sphere and look in the inside of it. To make the sphere we generate its geometry - its mathematical 3D representation. Then apply a matrix, inverting it so the outside plane is on the inside.

```
var sphere = new THREE.SphereGeometry(500,
60, 40);
```

## Develop with Unity

Google Cardboard provides a Unity SDK and demo which you can use for free. Unity can export to WebGL (experimentally) and has community support. Unity has an easy-to-use interface for scenes and so on.



### Left

Adding the video mesh to the sphere makes it a bit more obvious as to the effect that we're striving for. Flip -1 to 1 in makeScale to see this

### Top left

The video is going to be 'projected' on the inside of this sphere. The camera's currently placed outside but will be moved inside to pan around

### Top right

The three.js site contains helpful documentation including code examples and a breakdown of the terminology used for arguments passed to methods

# Tutorials

## Create virtual reality panoramas

```
sphere.applyMatrix(new THREE.Matrix4().
makeScale(-1, 1, 1));
```

### 7. Play video on devices

On iOS and Android, videos can't be automatically played, it needs a user to interact with the page beforehand. This could be linked to a button, or in this case, any click on the page will trigger the video to play. On iOS the video will be paused as you pan around it.

```
var video = document.
getElementById('video');
function bindPlay () {
video.play();
document.body.removeEventListener('click',
bindPlay);
}
document.body.addEventListener('click',
bindPlay, false);
```

### 8. Create a video texture

The video texture maps the video to the sphere. Create the texture by passing it the video element, then set the min filter to linear as the size is unlikely to be a power of 2 (eg 16 by 16). The material describes the appearance of the object. The basic mesh will show as a flat polygon.

```
var videoTexture = new THREE.
VideoTexture(video);
```

```
videoTexture.minFilter = THREE.LinearFilter;
var videoMaterial = new THREE.
MeshBasicMaterial({
map: videoTexture
});
videoMesh = new THREE.Mesh(sphere,
videoMaterial);
```

### 9. Camera effects

The stereo effect works by passing the renderer to it and rendering everything out twice, but slightly offset. This gives the illusion of depth and VR its appeal. To see the scene we need to place a camera within it. In this case, the perspective camera is used for a first-person view.

```
effect = new THREE.StereoEffect(renderer);
camera = new THREE.PerspectiveCamera(95, 1,
0.001, 700);
```

### 10. Set camera's position

The perspective camera takes arguments in the following order: field of view, aspect ratio, depth to start rendering objects (near), and depth to stop rendering objects (far). Once created, positioning the camera is as simple as setting its 3D coordinates: x, y and z.

```
camera.position.set(100, 100, 100);
scene.add(camera);
```

### 11. Add controls for mouse

Next up we'll add orbit controls. This allows you to click and drag to look around, which is useful for debugging when not on a device. We then set the starting position of the controls to the same position as the camera.

```
controls = new THREE.OrbitControls(camera,
element);
controls.rotateUp(Math.PI / 4);
controls.target.set(
```

```
camera.position.x + 0.1,
camera.position.y,
camera.position.z
);
controls.noZoom = true;
controls.noPan = true;
```

### 12. Change controls

If the environment that our code is running in fires the device orientation event then instead of using orbit controls it'll switch to using device orientation controls. This means users can simply rotate their device to look around instead of tapping and dragging.

```
function setOrientationControls(e) {
if (!e.alpha) {
return;
}
controls = new THREE.DeviceOrientationContro
ls(camera, true);
controls.connect();
controls.update();
```

### 13. Remove event listener

Once the controls are set to use device orientation, we won't want to reinitialize those controls every time the event is fired. To fix this, remove setOrientationControls at the bottom of the previous function.

```
window.removeEventListener('deviceorientati
on', setOrientationControls, true);
}
```

### 14. Device orientation

The device orientation event is fired when the accelerometer detects a change in the device's orientation. We're interested in the z axis, otherwise known as alpha (beta and gamma are x and y

## Black screen

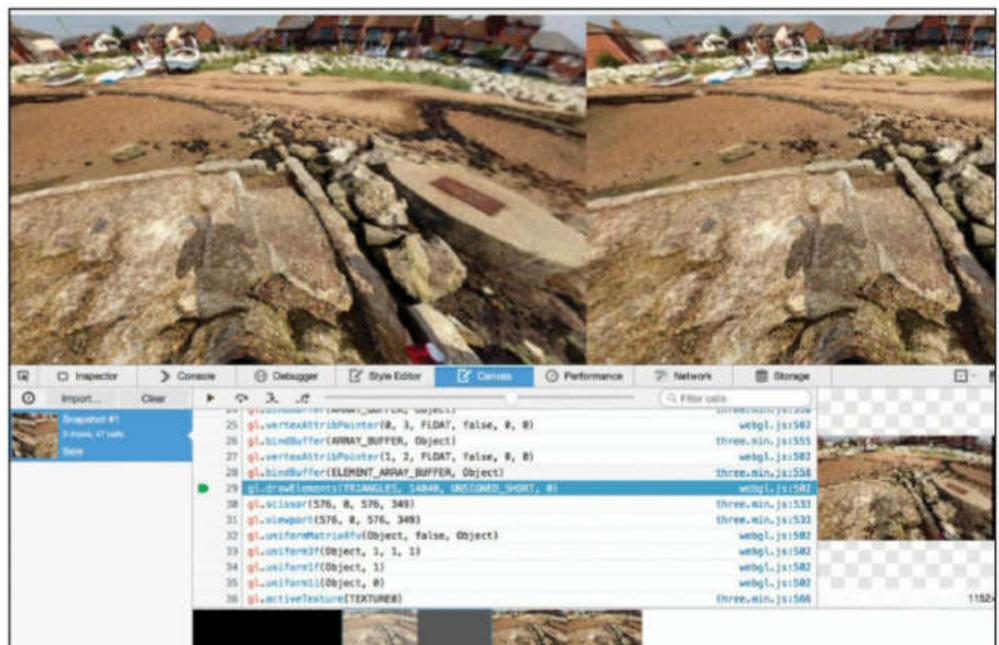
Some built-in command-line servers (like PHP and Python on OS X) don't serve video files correctly. MAMP or similar programs are able to handle them though.



**Top left**  
The DeviceOrientationControls adds its own event listener to deviceorientation. As the device moves, it updates its alpha, beta, and gamma values

**Top right**  
Finally our Cardboard app comes together with the stereo effect plugin duplicating and offsetting the rendered video; it's very effective viewing

**Right**  
Firefox provides excellent tools for debugging what's happening in Canvas elements. It captures a frame and you can scrub through to see changes





### Content for your panorama

One of the most challenging parts is finding good content for 360-degree panoramas. A number of apps exist for smartphones (like Google Street View or Microsoft Photosynth) which takes multiple pictures and stitches them together. While these are often free and easy to use, automatic stitching is hard to ensure and there are often misaligned objects. To get true 360-degree content you need dedicated hardware, like a rig of GoPros or the RICOH THETA. The strange appearance of these images is known as an equirectangular projection. It distorts the northern and southern parts of the image and has two distinct fisheye distortions. Google Images has a few of these, but are rarely royalty-free.

respectively). Alpha goes from 0 to 360. In the init function we'll add the listener for device orientation.

```
window.addEventListener('deviceorientation',
  setOrientationControls, true);
```

### 15. Add sphere to scene

The final part of init adds the video mesh, the culmination of the sphere and video texture, to the scene. Attach a resize handler to ensure that browser resizing doesn't look strange, and kick off animate.

```
scene.add(videoMesh);
window.addEventListener('resize', resize,
  false);
animate();
```

### 16. Resize function

Resize is responsible for making sure the aspect ratio is maintained when resizing the window (or if going from portrait to landscape). Then the renderer and stereo effect are updated with the new width and height.

```
function resize () {
  var width = container.offsetWidth;
  var height = container.offsetHeight;
  camera.aspect = width / height;
  camera.updateProjectionMatrix();
  renderer.setSize(width, height);
  effect.setSize(width, height);
}
```

### 17. Update function

The update function calls resize and updates the controls with a new delta from the clock. The delta is the number

of seconds since the clock's getDelta method was last called. It'll be called by the animate function, which will be written shortly, and invoke getDelta.

```
function update (dt) {
  resize();
  controls.update(dt);
}
```

### 18. Render function

The render function outputs everything to the screen. 'Effect' here is the stereo imaging and sets up the left and right images which behave as separate cameras. Internally it then uses the renderer (which we provided much earlier) to output to the Canvas.

```
function render () {
  effect.render(scene, camera);
}
```

### 19. Animate function

Animate keeps our panorama responsive to movement. At each frame it calls update and render. Crucially, it also calls itself as a requestAnimationFrame callback. This ensures that the camera is perpetually updated.

```
function animate () {
  requestAnimationFrame(animate);
  update(clock.getDelta());
  render();
}
```

### 20. Fullscreen ahead

Earlier we referenced a full-screen function which is triggered when the user clicks the Canvas element. This

should be straightforward but there are many vendor prefixed versions that we need to accommodate. The first of the if statements is the standard, nonprefixed one and we cascade down Microsoft, Mozilla and WebKit.

```
function fullscreen () {
  if (container.requestFullscreen) {
    container.requestFullscreen();
  } else if (container.msRequestFullscreen) {
    container.msRequestFullscreen();
  } else if (container.mozRequestFullScreen) {
    container.mozRequestFullScreen();
  } else if (container.
    webkitRequestFullscreen) {
    container.webkitRequestFullscreen();
  }
}
```

### 21. Finishing touches

Through the goodwill of the developer community, the technology exists to place 360-degree panoramas in the browser. There are currently limitations on playing back video within iOS which needs to be addressed but as an interim, an image-only panorama can be used.

```
#canvas {
  position: absolute;
  top: 0; bottom: 0;
  left: 0; right: 0;
}
#video {
  position: absolute;
  left: -9999em;
}
```

# web workshop

## How to animate sliding panels on scroll

As seen on [isl.co](http://isl.co)

### Main menu

The menu has a simple but effective animated rollovers, with an expanding line appearing below the link.

### Panel content

As the user scrolls down the page, the content within the sections slide into place for maximum impact with the user.

### Scroll arrow

When the site first loads, the image of the down arrow slides onto the screen showing that there is more content below.

### Motion backdrop

The background to the top of the page is a movie file showing ISL's projects, with some impressive camera moves.

### Rollover arrow

The arrow indicating more content has a rollover effect that dips the arrow down with a colour transition.

## How to animate sliding panels on scroll

↓ **DOWNLOAD TUTORIAL FILES** [www.filesilo.co.uk/webdesigner](http://www.filesilo.co.uk/webdesigner)

**I**SL is part of a new breed of digital agency – there is a growing trend that doesn't see them exclusively tied to the desktop screen. Sure, there are a lot of agencies that make content responsive to different devices, and some of those make apps as well.

ISL goes beyond those conventions and also creates hardware installations for clients and as digital devices become ever more present in our lives, brands demand that something completely new is created to engage them with their audience. They've created a physical mentions box for Facebook, a launch campaign for NBC

Universal's *Mr. Robot* and an internet-controlled arcade crane for Nickelodeon's *SpongeBob SquarePants*.

When it comes to their own website, it becomes a place where they can show off their skills and talents for their varied work and approach to solving problems. Rather than just state what they've done for their clients, they take a case study approach that defines the problem, the solution that they have taken and the most important part of all, the results that this has given their clients. It's no use to make awesome use of technology unless it actually works in what it's trying to achieve. You can get the full code for this tutorial on FileSilo.



**<comment>**

What our experts think of the site

### A lesson in over-caffeinated, youthful exuberance

"ISL.co, like the agency itself, is a balance between designerly minimalism and overcaffeinated, youthful exuberance. In practice, this meant a combination of vast white space and simple, clear typography, paired with tons of movement – from background videos to fluid, bouncy UI animations."

**Zach Goodwin, creative director**

## Technique

### 1. Scroll-triggered animation

To trigger animation by code, the Waypoints.js ([imakewebthings.com/waypoints](http://imakewebthings.com/waypoints)) library and the Animate.css ([daneden.github.io/animate.css](http://daneden.github.io/animate.css)) library will be used. Download and add them to your document. Then add the first CSS rule to position the top element.

### 2. Style up the page

Continue adding CSS as this will provide some classes for us that position elements at the bottom of a div and float elements left and right on the page. The final style here creates a section that has a yellow background so it can be seen on the page.

### 3. Final CSS

As in the previous step the CSS here creates blue and black sections on the page so that they can easily be seen to demonstrate what is happening. The final two rules turn animated elements on and off by giving them opacity values.

```
.blue{
  background-color: #00baff;
  height: 200px;
}
.black{
  background-color: #282f31;
  height: 200px;
}
.os-animation{ opacity: 0; }
.os-animation.animated{ opacity: 1; }
</style>
```

### 4. HTML content

Move to the HTML section of the page as this is where the content will be added. This is all styled up via the CSS that has been added. A full-screen section will be at the

top with an animated down arrow scrolling down, which triggers the animated elements onto the page.

```
<div id="top">
<div class="os-animation btm" data-os-
animation="fadeInLeft" data-os-animation-
delay="0s">

</div>
</div> ...
```

### 5. Add JavaScript

Now the JavaScript is added and placed in a jQuery 'document ready' function to allow all elements to load. Then the function that will be called when the user scrolls is added. This checks elements on the screen for certain data attributes and applies CSS accordingly.

```
<script type="text/javascript">
$(function(){
function onScrollInit( items, trigger ) {
items.each( function()
{
var osElement = $(this),
osAnimationClass = osElement.attr('data-os-
animation'),
osAnimationDelay = osElement.attr('data-os-
animation-delay');
osElement.css({
'-webkit-animation-delay': osAnimationDelay,
'-moz-animation-delay': osAnimationDelay,
'animation-delay': osAnimationDelay
});
});
});
```

### 6. Listen to the scroll

When an element is triggered, the appropriate CSS is added from the Animate.css library. Here the listeners are created that tie the onScrollInit function to the scrolling action by the user. Save this and test in the browser to see the animation triggered on the user's scroll.

#### EXPERT ADVICE

##### Animation trickery

The main point of animating content is to draw attention to it. As content doesn't appear in its entirety in the user's viewport, it is important to capture when it actually is present and make it animate at that point to give maximum impact to the user.

# Build full-screen navigation

Use the full-screen features of CSS and JavaScript to create menu systems for websites and web apps





he web has transformed from a platform for the delivery of information and content to also being capable of delivering software applications.

Web-based software applications have often been labelled as 'not as good' as their native counterparts - an attribute that is now more of an incorrect stereotype with the modern browsers now supporting HTML5.

A big part of the problem that web applications face in their accusation of being a poorer equivalent of their native counterparts is based on psychology - people who make such accusations are often unaware that many apps they've download from their app store account are merely web apps wrapped by a native web view element.

One of the features of HTML5 that can be used to condition users to take your web app more seriously is to display content in fullscreen - this is more relevant to the desktop where windows can clutter the screen, but are also relevant to mobile smartphones and tablets.

Our example will create a menu page that provides the user with the option to access content in full-screen mode. A useful element for full-screen applications is the use of iframes, which are a good solution for the limitation of the browser exiting full-screen mode as soon as the user visits a new URL; iframe elements enable page changing without changing the current URL.

## 1. Initiate HTML page

As with any webpage, there is a requirement to define the page's HTML, head and body structure. Use the head section to contain any meta data such as the page title for SEO and accessibility that you may need.

## 2. Load resources

The HTML <head> section should contain the links to any resources you are using for the page. We're using

this to load the CSS stylesheet and JS code. This lets the resources to be reused by other pages if required.

```
<link rel="stylesheet" type="text/css"
href="styles.css" />
<script src="controls.js" type="text/
javascript"></script>
```

## 3. Page container

Use the <body> section to contain the visible content. We start this by placing the <main> page container inside the body; this will be used to allow the controlled layout of the content. Your page title and introduction content will go inside this.

## 4. Fullscreen: controls

The controls to access the full-screen elements are placed as content inside the <main> container element. Each of these items have a [data-screen] attribute that stores the element ID of the item to open.

## 5. Fullscreen: elements

Some elements will be displayed directly in full-page mode. These elements are to be added to the content inside the <main> container. We add a selection of images that will be selectable, as well as a number of iframe pages with 'class="fullscreen"' to be called on later.

```
<iframe id="screen1" class="fullscreen"
src="http://www.nextpoint.co.uk"></iframe>
<iframe id="screen2" class="fullscreen"
src="http://www.blitzbasic.com"></iframe>

```

## 6. Fullscreen: containers

In addition, providing the ability to make elements directly display in full-screen mode, we also have the

ability to contain these elements inside a container that has controls, such as to exit full-screen mode and/or switch to viewing other elements.

```
<div id="screen3" class="fullscreen">
<span action="exit">close</span>
<iframe src="http://www.monkey-x.com"></
iframe>
</div>
```

## 7. JavaScript selector functions

With all of the HTML elements on the page, the next step is to start building functionality with JavaScript. Create a file called 'controls.js' and add the following functions to allow easy selection of HTML page elements.

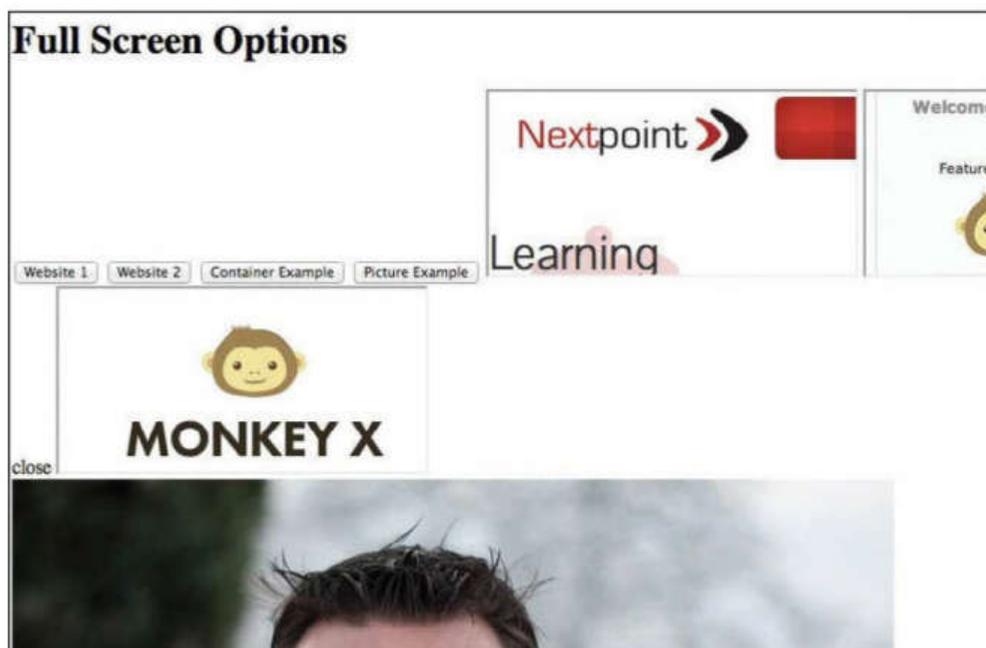
```
$ = function(cssRule){
return document.querySelector(cssRule);
}
$$ = function(cssRule){
return document.querySelectorAll(cssRule);
}
```

## 8. JS full-screen activation

Our example will use a single function to activate any of the full-screen presentation of the elements passed to it. This allows the control of full-screen requests to be managed from one place, with it being easy to upgrade later if this is required.

## Use iframe apps

A problem with full-screen mode is that it closes when the user visits a new URL - this is solved by using iframes, enabling you to show different webpages without changing the URL.



**Left**  
The HTML elements are on page, but without any styling to make the effect work - hence the content of other pages being visible

**Top left**  
The navigation screen has now been styled, complete with the hiding of elements that are to be opened for full-screen display

**Top right**  
Full-screen options are now added as buttons - it is their [data-screen] attribute that defines them as the controls to be searched for

# Tutorials

## Build full-screen navigation

```
function fullscreen(element){  
if(element.requestFullscreen) {  
element.requestFullscreen();  
} else if(element.mozRequestFullScreen) {  
element.mozRequestFullScreen();  
} else if(element.webkitRequestFullscreen) {  
element.webkitRequestFullscreen();  
} else if(element.msRequestFullscreen) {  
element.msRequestFullscreen();  
}  
}  
}
```

### 9. Controls: exit fullscreen

There is a need to allow the user to exit full-screen mode from within the webpage. This is performed in a similar way to opening full-screen mode, but instead referencing the main document's `exitFullscreen()` function.

```
function fullscreen_exit(){  
if (document.exitFullscreen) {  
document.exitFullscreen();  
} else if (document.msExitFullscreen) {  
document.msExitFullscreen();  
} else if (document.mozCancelFullScreen) {  
document.mozCancelFullScreen();  
} else if (document.webkitExitFullscreen) {  
document.webkitExitFullscreen();  
}
```

```
}  
}
```

### 10. JS action listeners

Controls that are responsible for activating full-screen presentation of other elements require their JavaScript listener to behave slightly differently - instead of activating themselves, we use the `[data-screen]` attribute to reference the ID of the element to activate the full-screen presentation.

```
window.addEventListener("load",function(){  
var screenTriggers = $$('[data-screen]');  
for(var i=0; i<screenTriggers.length; i++){  
screenTriggers[i].addEventListener("click",function(){  
fullscreen( $('#'+this.getAttribute("data-screen")) );  
});  
}  
});
```

### 11. Attach fullscreen\_exit

Looking back at Step 6, there are elements used as containers for presentation - complete with controls. Attach the previously created `fullscreen_exit()` function to elements with a `[data-action="exit"]` attribute when clicked, in order for the user to exit full-screen mode.

```
window.addEventListener("load",function(){  
var screenTriggers = $$('[data-action="exit"]');  
for(var i=0; i<screenTriggers.length; i++){  
screenTriggers[i].addEventListener("click",function(){  
fullscreen_exit();  
});  
});
```

```
}  
});
```

### 12. Initialise styling

Now that the JavaScript functionality is complete, the next stage is to start the definitions for the visual presentations. Create a file called `'main.css'` and then insert the following CSS formatting for the main HTML and body containers.

```
html,body{  
background: #000;  
padding: 0;  
margin: 0;  
font-family: monospace;  
height: 100%;  
}
```

### 13. Content container

The content is contained inside the `<main>` element, which positions the content in the centre of the screen. We achieve this positioning by setting the left and right margins of `<main>` to `auto`, which will balance the margin spacing between both sides.

```
main{  
display: block;  
width: 75%;  
margin: 10% auto 0 auto;  
background: silver;  
padding: 1em;  
}
```

### 14. Navigation styling

The full-screen options all have the `[data-screen]` attribute, hence we use this to reference them; enabling us to change their element type from `button` if needed. Also apply colour, padding and transition properties.

## About the exit plan

Browsers provide a way to exit full-screen mode, but users will forget any notice they are shown. Make sure to add an on-page exit button to make it easy for users to exit fullscreen when they want to do so.



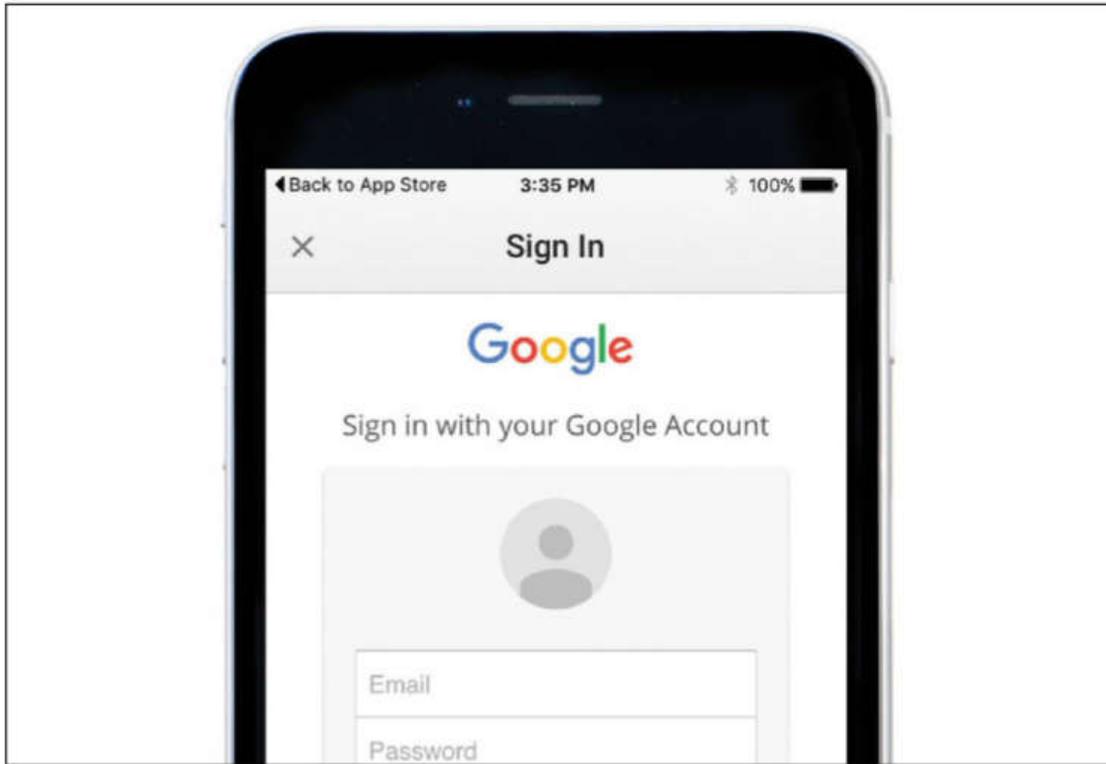
**Top left**  
Other types of elements, such as video, can be made fullscreen if required.



**Top right**  
Another website being shown in fullscreen through an iframe, enabling navigation without having to change the current URL

**Right**  
A website in full-screen display with the exit button bar placed at the top of the screen





### Why fullscreen?

The ability to offer your website and web application users the option to view content in fullscreen allows your design to access maximum space for better usability. It could also provide focus on a single element on your page, for example with picture, video or content section.

For web apps, it also has the psychological advantage of persuading users to think of your creation as an app, rather than as a website. This will then enable users to take your software more seriously as an app that they would actually want to use. With the latest features of HTML5 supporting offline functionality and offline data storage, the difference between the capabilities of native and web apps have become very blurred.

```
[data-screen]{
display: inline-block;
padding 1em;
font-size: 2em;
background: #333;
color: #fff;
transition: background-color 1s;
-webkit-transition: background-color 1s;
}
```

### 15. Navigation hover effect

To make sure that users can clearly see that navigation elements can be interacted with, we will place an effect on each of the navigation items to slightly change their appearance when the mouse pointer is hovered over them. Changing the colour to become a light shade gives the appearance of it lighting up.

```
[data-screen]:hover{
background-color: #777;
}
```

### 16. Exit style

Elements that have `[data-action="exit"]` will need to have this displayed as a visible control. We will make this appear as a full-size red bar with white text that stretches across the full width of the screen. This element will also be 5% of the height of the full screen.

```
.fullscreen [data-action="exit"]{
display: block;
width: 100%;
height: 5%;
```

```
background: #c00;
color: #fff;
transition: background-color 1s;
-webkit-transition: background-color 1s;
}
```

### 17. Exit hover

The exit option will also change appearance when the user hovers over it. This is achieved by using the `:hover` selector, in which we will change the background and text colours. With the `background-color` property being set as a transition in the previous step, the colour change will animate when the element is hovered over.

```
.fullscreen [data-action="exit"]:hover{
background-color: #fff;
color: #c00;
}
```

### 18. The iframe styling

Container elements that contain an `iframe` element will be displayed to show them at full size. This needs to take into account the five per cent height of the exit option, hence the height of the `iframe` will be 95%.

```
.fullscreen iframe{
display: block;
width: 100%;
height: 95%;
}
```

### 19. Hiding full-screen elements

Full-screen elements use the class name `'fullscreen'` and are hidden by default. Properties to ensure 100 per cent

width and height are set for when the elements are later displayed in full-screen mode - avoiding the need to repeatedly define this under the different browser vendor full-screen selectors.

```
.fullscreen{
display: none;
width: 100%;
height: 100%;
}
```

### 20. Full-screen visibility

Items that have been hidden from normal view need to become visible when the browser enters full-screen mode. This is achieved by using `.fullscreen` selector - although take note that different browser vendors use different versions and spellings for this selector.

```
.fullscreen:-webkit-full-screen{display:
block;}
.fullscreen:-moz-full-screen{display:
block;}
.fullscreen:-ms-fullscreen{display: block;}
.fullscreen:full-screen{display: block;}
.fullscreen:fullscreen{display: block;}
```

### 21. Finishing touch

With everything complete, you are now free to make any additional styling required for your version of the full-screen menu tool. In this example, we add an underline style to the `h1` element used as the visible page

```
title.
h1{
text-decoration: underline;}
```

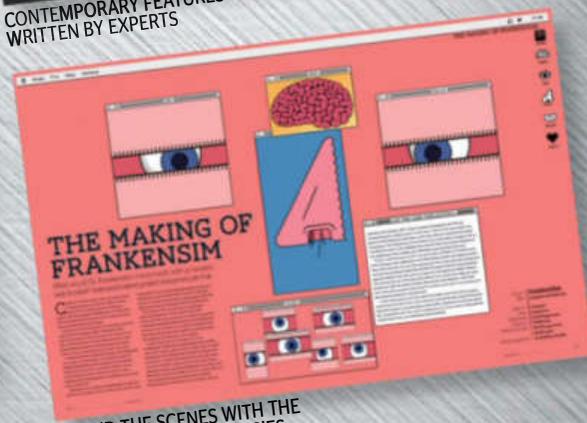
SUBSCRIBE AND SAVE 30%



ONLY £25.15 EVERY 6 ISSUES



CONTEMPORARY FEATURES WRITTEN BY EXPERTS



BEHIND THE SCENES WITH THE WORLD'S BIGGEST AGENCIES

Order hotline

0844 848 8413

Calls will cost 7p per minute plus your telephone company's access charge

Online at

[www.imaginesubs.co.uk/wed](http://www.imaginesubs.co.uk/wed)

# Every issue packed with...

- Expert tutorials on HTML, CSS, jQuery and leading libraries and frameworks
- In-depth interviews with the world's leading creative agencies
- A close-up look at the latest web development technologies
- Designer resources and pro video guides

# Why you should subscribe...

- Save 30% off the cover price - just £25.15 every 6 issues on Direct Debit
- FREE delivery direct to your door
- Never miss an issue

## Order by

31 DECEMBER

Use code **PS15** for this offer.

## BY POST

Send your completed form to:  
Web Designer Subscriptions, 800 Guillat Avenue,  
Kent Science Park, Sittingbourne, Kent ME9 8GU

## YOUR DETAILS

Title \_\_\_\_\_ First name \_\_\_\_\_  
Surname \_\_\_\_\_  
Address \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Postcode \_\_\_\_\_ Country \_\_\_\_\_  
Telephone number \_\_\_\_\_  
Mobile number \_\_\_\_\_  
Email address \_\_\_\_\_

## DIRECT DEBIT PAYMENT

**UK Direct Debit Payment**

I will pay just £25.15 every 6 issues (Save 30%)

ip IMAGINE PUBLISHING		Instruction to your Bank or Building Society to pay by Direct Debit		DIRECT Debit	
<small>Please fill in the form and send it to: Imagine Publishing Limited, 800 Guillat Avenue, Kent Science Park, Sittingbourne, Kent, ME9 8GU</small>					
Name and full postal address of your Bank or Building Society			Originator's Identification Number		
To: The Manager	Bank/Building Society		5   0   1   8   8   4		
Address			Reference Number		
Postcode			Instructions to your Bank or Building Society		
Name(s) of account holder(s)			<small>Please pay Imagine Publishing Limited Direct Debits from the account detailed in this instruction subject to the safeguards assured by the Direct Debit guarantee. I understand that this instruction may remain with Imagine Publishing Limited and, if so, details will be passed on electronically to my Bank/Building Society</small>		
Branch sort code			Signature(s)		
Bank/Building Society account number			Date		
<small>Banks and Building Societies may not accept Direct Debit instructions for some types of account</small>					
<small>AG instruction form</small>					

## PAYMENT DETAILS

**YOUR EXCLUSIVE READER PRICE, 1 YEAR (13 ISSUES)**

UK £62.30 (Save 20%)  Europe – £70  World – £80  USA – £80

### Cheque

I enclose a cheque for £ \_\_\_\_\_  
(made payable to Imagine Publishing Ltd)

### Credit/Debit Card

Visa  Mastercard  Amex  Maestro

Card number \_\_\_\_\_ Expiry date \_\_\_\_\_  
Issue number   (if Maestro)

Signed \_\_\_\_\_

Date \_\_\_\_\_

Please tick if you do not wish to receive any promotional material from Imagine Publishing Ltd by post   
by telephone  via email

Please tick if you do not wish to receive any promotional material from other companies by post   
by telephone  Please tick if you DO wish to receive such information via email

## TERMS & CONDITIONS

Terms and Conditions: This offer entitles new UK direct debit subscribers to pay only £25.15 every 6 issues. New subscriptions will start from the next available issue. Offer code PS15 must be quoted to receive this special subscription price. Details of the Direct Debit Guarantee are available on request. This offer expires 31 December 2015. Imagine Publishing reserves the right to limit this type of offer to one per household. Subscribers can cancel this subscription at any time.



# TOOLS YOU NEED NOW

Get learning with these essential APIs and specifications for contemporary practices

# 1 WEB SPEECH API

A TECHNOLOGY IN ITS INFANCY, BUT WITH THE POTENTIAL TO INTRODUCE ENTIRELY NEW MODES OF EXPERIENCE TO THE WEB

The Web Speech API is an experimental technology, due to its ever-changing specification, which brings voice dictation software to the web. The underlying premise of the API is to provide capacity for both brief input (think commands) as well as continuous input (think classic dictation, allowing for pauses).

With a bit of imagination, this feature could begin quite a change in the way that user interfaces are designed on the web. Google and Apple have already been exploring speech to enhance particular aspects of the user experience in their products with 'Okay Google', and 'Hey Siri'. Such facilities on the web will surely bring new and exciting opportunities.

The specification suggests more than a few uses such as voice web search, continuous recognition of open dialog, speech UI present when no visible UI needs to be present and voice activity detection ([dvcs.w3.org/hg/speech-api/raw-file/tip/webspeechapi.html#use\\_cases](http://dvcs.w3.org/hg/speech-api/raw-file/tip/webspeechapi.html#use_cases)).

Of course there will be some privacy concerns with any API that potentially enables a device to capture and store local ambience for later. The specification sets out two mandatory conditions for vendors to follow, which paraphrased are: "User agents can only start recording speech with explicit and informed consent... User agents must provide obvious indications when speech is being recorded. This interface element must also allow users to cancel the current speech session."

In terms of implementation, like most APIs of this type, the interface is event-driven. SpeechRecognition

exposes four evented functions, which are: onstart, onresult, onerror, and onend.

Rather than try to explain the event-oriented nature of the API, here is a basic example of it in action.

```
<textarea id="dict"></textarea>
var recog = new window.
    SpeechRecognition();
    var dict = document.
        querySelector('#dict');
    recog.continuous = true;
    recog.onresult = function(e)
    {
        e.results.
        forEach(function(r) {
            dict.textContent += r[0].
            transcript;
        });
    }
    recog.start();
```

This code creates a new instance of the SpeechRecognition interface. It then configures the instance to recognise continuous input, which enables the speaker to pause. The instance is then started. When the results are determined as the speaker talks, the textarea is appended to with the most likely correct result.

URL: [bit.ly/1WsQh1u](http://bit.ly/1WsQh1u)

**TARGET AUDIENCE**  
 This technology will be particularly useful for people with disabilities such as visual impairment, and generally make the web an even more accessible place.

## SCENARIOS

### VOICE WEB SEARCH

No doubt when this API becomes commonplace there will be clients requesting their own version of 'Okay Google'.

### CONTINUOUS RECOGNITION OF OPEN DIALOG

This one really depends on who is using it. Hook it up to an email client and send ten times more email!

### SPEECH UI PRESENT WHEN NO VISIBLE UI NEEDS TO BE PRESENT

This technology could unlock an entirely new market of even more minimal writing.

### VOICE ACTIVITY DETECTION

There has got to be some interesting opportunities when general voice activity levels are paired with HTML5 Canvas.

# 2 TEXT TO SPEECH API

## WEB SPEECH API'S OTHER HALF

The flip side of speech-to-text is text-to-speech. It really is just like the 'say' command on any Mac OS X machine, even providing different voices should they be required. Of course because this API is on the web, and being a web technology, it can and should be put to better use.

Most of the legwork is done by Web Speech API's SpeechSynthesis interface, which works in a similar manner to SpeechRecognition, where evented functions are exposed along with the speech function aptly named 'speak'. Check out a stripped-down example of what it can look like in action below:

```
var s = new SpeechSynthesisUtterance();
s.text = 'I like cat food';
s.lang = 'en-US';
window.speechSynthesis.speak(s);
```

A new instance of the SpeechSynthesisUtterance interface is instantiated. The instance then has the text defined - the string the computer is going to speak, along with a language. The final line passes the configured instance to the speak function and the computer begins to talk.

Unlike the SpeechRecognition API, SpeechSynthesis is more widely supported, which makes it a real option provided that the target market is on iOS's Safari. This is quite handy for any hands-free mobile applications, such as turn-by-turn directions, or maybe even a step-by-step recipe app.

URL: [bit.ly/1L5Hbpj](http://bit.ly/1L5Hbpj)

## SCENARIOS

### LISTENABLE BLOG POSTS

A great feature for the visually impaired, blog posts that people can listen to would make for a really compelling experience.

### TURN-BY-TURN DIRECTIONS

Put your phone in your pocket and you can then be audibly guided to your destination by the browser's voice.

### STEP-BY-STEP RECIPES

Sticky marks on touchscreens whilst weighing out ingredients could be a thing of the past.

## BROWSER SUPPORT

CHROME	25+
CHROME FOR ANDROID	44+
FIREFOX	N/A
SAFARI	N/A
EDGE/IE	N/A
IOS	N/A

## BROWSER SUPPORT

CHROME	43+
CHROME FOR ANDROID	44+
FIREFOX	N/A
SAFARI	8+
EDGE/IE	N/A
IOS	7.1+

“Google and Apple have already been exploring speech to enhance particular aspects of the user experience”

# 3 WEBSOCKETS API

FIRST THERE WAS HTTP. THEN ALONG CAME AJAX. NOW, THERE IS WEBSOCKETS

WebSockets is a fundamentally different concept to HTTP and AJAX. Instead of the client requesting resources and the server responding with them, the server and client agree to maintain a connection, called a socket. At any time, the server and client can start sending each other data across this socket, inherently avoiding the overhead that comes with HTTP. The lean nature of this protocol lends itself to latency-critical applications and real-time experiences.

WebSocket-driven applications often require large numbers of persistent connections, something that traditional server-side technologies tend to be bad at facilitating. Server-side architectures that allow for high concurrency on a budget are often favoured – like those that are touted as ‘non-blocking IO’.

URL: [mzl.la/1j9X55Q](http://mzl.la/1j9X55Q)

## TOOLS

SOCKET.IO  
SOCKET.IO

Real-time Node.js WebSocket architecture.

TORNADO

[GITHUB.COM/TORNADOWEB/TORNADO](https://github.com/tornadoweb/tornado)

Python networking library and framework.

PLINK

[DINAHMOELABS.COM/PLINK](http://dinahmoelabs.com/plink)

Real-time collaborative music-making experience.

## SCENARIOS

### REAL-TIME PROPERTY UPDATES

A forward-thinking estate agent implements real-time property updates, providing an ever-changing map of property to let.

### MULTIPLAYER GAMING AND COLLECTIVE EXPERIENCES

Any multiplayer game will require low-latency communication between clients and the server. This could apply to other group experiences as well.

### REAL-TIME CHAT

WebSockets could make a reasonable replacement for the aging IRC, enabling richer media to be used in discussion.

## BROWSER SUPPORT

CHROME	.....	31+
ANDROID	.....	4.4+
FIREFOX	.....	38+
SAFARI	.....	8+
EDGE/IE	.....	10+
IOS	.....	7.1+

# 4 HISTORY API

SAVE STATES IN A SINGLE-PAGE WEB APP

This API provides means to manipulate browser history with JavaScript. This isn't limited to just forward, backward and specific points, it also lets developers add their history events with pushState.

History.pushState takes three values: an object associated with the state, a title and then a page URL which will be displayed in the browser's address bar. The history API is very useful for single-page applications that have different states or views that a user may want to navigate between, but it still retains the benefit of XHRs.

URL: [mzl.la/1KzFuKx](http://mzl.la/1KzFuKx)

# 5 LINK PREFETCH API

PREFETCH NEXT STEPS IN KEY JOURNEYS

The HTML5 Prefetch API is a browser mechanism that prefetches documents before a user manually requests the ones that they are likely to visit in the near future. Prefetching resources like this stops users having to waste time waiting for server response – the largest delay when fetching new pages and assets.

Implementing prefetch cunningly can have a vast effect on perceived performance, especially when users are doing repetitive tasks.

Prefetching tags appear in the <head> of the page, along with the other metadata relating to the site.

URL: [mzl.la/1VafzyW](http://mzl.la/1VafzyW)

## BROWSER SUPPORT

CHROME	.....	31+
FIREFOX	.....	38+
SAFARI	.....	8+

## BROWSER SUPPORT

CHROME	.....	31+
FIREFOX	.....	38+
SAFARI	.....	N/A

# 6 GETUSERMEDIA API

CAPTURE VIDEO/AUDIO FROM DEVICES  
HTML5's getUserMedia API allows developers to capture media streams from the device – video, audio, and both at the same time. This capability isn't that exciting on its own, but it gets interesting when paired with other HTML5 technologies.

For example, the video stream returned by getUserMedia can be applied locally to a video element. That video element can be drawn to HTML5 Canvas, which in turn can be turned into a dataURL and then into a blob, ready to be sent across a WebSocket to all other connected clients.

The nice thing about being able to bring the video stream into HTML5 Canvas is it allows for manipulation of the image before it gets sent to the server. It would be very easy to scale the frames down, run filters over them or even apply advanced effects such as blurring and distortion. GetUserMedia returns a stream of data that can be used locally by HTML5's video element, like so:

```
<video autoplay></video>
var video = document.querySelector('video');
navigator.getUserMedia({
  video: true,
  audio: true
}, function(s) {
  video.src = window.URL.createObjectURL(s);
  video.play();
});
```

The DOM is queried for the video element. The script then requests permission to capture video and audio streams via the getUserMedia API. Finally, the stream returned is given to the video element, which begins playback in the browser.

URL: [mzl.la/1iLRLWp](http://mzl.la/1iLRLWp)

## PARAMETERS

### CONSTRAINTS

Takes an object describing the stream constraints, such as width, height, frame rate and more.

### SUCCESSCALLBACK

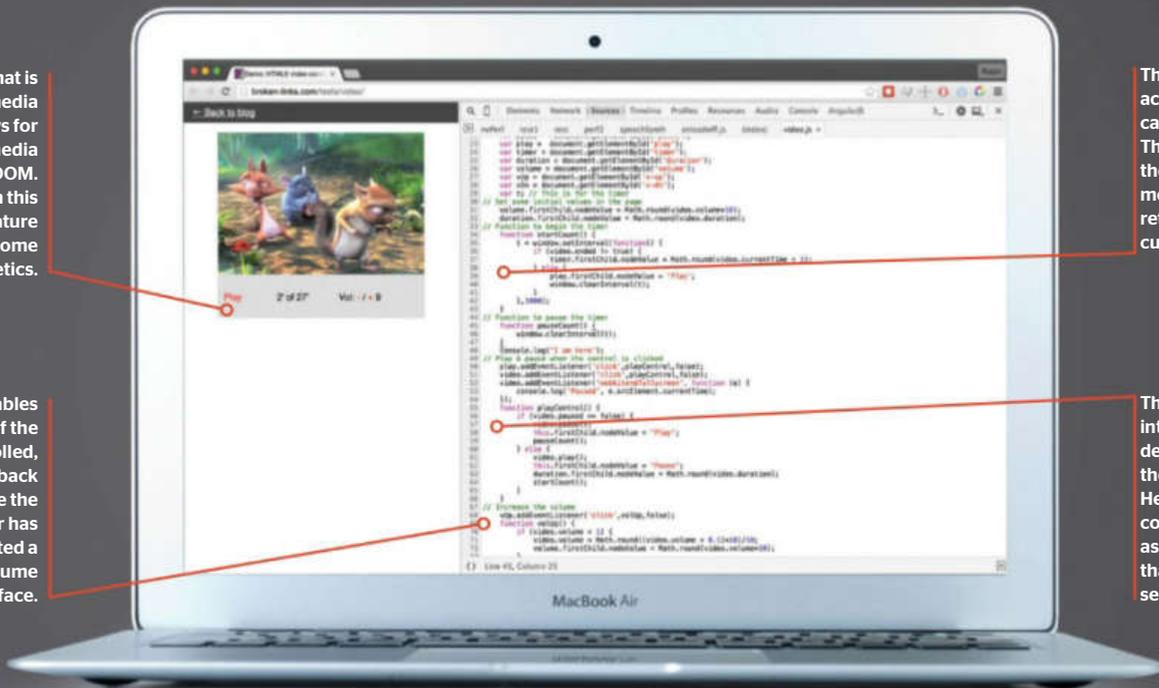
If the request for a user's media was successful, this function is invoked and the stream is passed.

### ERRORCALLBACK

If the request for media fails due to permissions, or lack of sources, this function is invoked.

## BROWSER SUPPORT

CHROME	.....	31+
CHROME FOR ANDROID	.....	44+
FIREFOX	.....	38+
SAFARI	.....	N/A
EDGE/IE	.....	12+
IOS	.....	N/A



The API that is associated with media elements allows for separate media controls in the DOM. Though basic in this example, the feature does enable some interesting aesthetics.

The API provides access to a property called `currentTime`. This property controls the playback of the media but it will also return the media's current position.

The API also enables basic properties of the media to be controlled, including playback speed. Here the developer has implemented a bespoke volume control interface.

The `MediaElement` interface allows the developer to control the playback of media. Here the developer has combined a play/pause as one button rather than having two separate ones.

## 7 HTML MEDIA API

HTML5 VIDEO AND AUDIO HAVE PHASED OUT FLASH. IT'S TIME TO THINK ABOUT USING EMBEDDED MEDIA MORE CREATIVELY

The HTML5 Media API provides a standard JavaScript API for interacting with the `HTMLMediaElement` interface. `HTMLVideoElement` and `HTMLAudioElement` are both children of the `HTMLMediaElement` and inherit its properties.

Media Elements have properties for manipulating the playback of media, including `load`, `play` and so on.

The scenarios for using this capability at first may seem obvious. Any media that Flash would have been used for before can now be done without browser plugins - but there are other benefits.

It's now easy to combine video and audio with other HTML5 technologies such as Canvas for the production of more engaging, grander interactive experiences. Canvas lets developers manipulate video pixels and apply bespoke effects.

Video that's more integrated with the surrounding webpage is also now possible. The JavaScript interface allows for play buttons to be separate from the traditional video user interface, opening up new possibilities for user experience designers.

Incorporating supporting animation to control elements, such as expanding/revealing a video on a button click, is now not only possible but also easy.

```

<video>
<source src="example.mp4" type="video/mp4" />
</video>
<button>Play</button>

var video = document.
    .querySelector('video');
var button = document.
    .querySelector('button');
button.
    .addEventListener('click',
        play, false);
function play() {
    if(video.paused) {
        video.play();
    } else {
        video.pause();
    }
}
    
```

**USE SILENT VIDEO EFFECTIVELY**  
Human emotions come across in moving pictures better than any other medium. Use HTML5 media to engage users on an emotional level.

First, DOM references are made to the video and button elements. Then, a click handler called `play` is then bound to the button. The `play` function provides playing and pausing functionality to the video by making use of the `HTMLMediaElement` API interface.

Building more advanced controls that cover volume, seeking, playback speed and tracking are all possible through the API. This means it's much easier to bring a visual style or brand to embedded media on the web than it ever has been before.

Finally, the media element interface lets developers create autoplaying media, giving rise to silent video as a design element in a webpage - or transparent media.  
**URL: [mzl.la/1NMOJYk](http://mzl.la/1NMOJYk)**

### SCENARIOS

#### STANDARD VIDEO EMBED

Browser support for HTML5 media is so good there really is no excuse for not using it as standard for media embedding.

#### STANDARD AUDIO EMBED

Standard audio embedding is also preferred over plugin-powered solutions, such as Flash or Silverlight.

#### SILENT VIDEO

Use silent video instead of images to capture human emotion and make emotional connections with users.

#### HYPERREALITY

Shoot a video that contains very little movement, but more than a photograph. Hyperreal scenes can bring a page to life.

### BROWSER SUPPORT

CHROME	31+
ANDROID	4.1+
FIREFOX	38+
SAFARI	8+
EDGE/IE	9+
IOS	7.1+

# 8 NAVIGATION TIMING API

## PERFORM ANALYSIS ON LOAD TIMES OF WEB PAGES WITH THIS API

Ensuring pages are quick to load is one of the more important responsibilities. Research conducted by Google in 2009 shows that every millisecond counts, with delays even as small as 100 milliseconds causing people to use the search engine less.

The Navigation Timing API can be used to gather helpful statistics on page-load performance, enabling developers to perform accurate and detailed analysis on any given page. The statistics on offer allow for useful metrics such as the critical render path and identification of slow images.

Use snippets in Chrome Developer Tools to store useful functions for pulling metrics out of any page:

```
function criticalRenderPath() {
  var t = window.performance.timing;
  // Converting to seconds
  return {
    interactiveAt: (t.domInteractive - t.
    domLoading) / 1000,
    domContentLoaded: (t.domContentLoadedEventSta
    t.domLoading) / 1000,
    complete: (t.domComplete - t.domLoading) / 1000
  }
}
```

This snippet references the performance.timing metrics for the page. It then does the necessary calculations to determine the metrics for each stage in

the critical render path, providing statistics in seconds for when the page was interactive, the DOM content was loaded and when the page had finished loading.  
**URL: [mzl.la/1eUB4oS](http://mzl.la/1eUB4oS)**

**SCENARIOS**  
**ANALYSIS OF ANY GIVEN PAGE**  
 The navigation timing API should be used as a quick reference to determine the critical render path of any webpage.  
**COMPARATIVE ANALYSIS**  
 Store the performance timing results when conducting a series of improvements as a benchmark for subsequent tests.

# 9 NETWORK INFORMATION API

## SMART DECISIONS AND CONNECTIONS

Long have developers wanted a definitive way to determine what type of connection a user is on so they're better able to tailor experiences. The Network Information API promises exactly this kind of function capability.

This API will allow developers to make subtle but important tweaks to experience, such as loading standard-definition video when a user is on a mobile data connection, as opposed to high definition when they're on Wi-Fi and are therefore able to load high-quality content better.

This distinction can also be effectively used in broader strokes, for example the user may want to send less data to the client for standard XHRs and this is especially useful if they are connected via a mobile data connection.

**URL: [mzl.la/1KAJcV4](http://mzl.la/1KAJcV4)**

## BROWSER SUPPORT

CHROME	31+
ANDROID	4.1+
FIREFOX	38+
SAFARI	8+
EDGE/IE	9+
IOS	9+

## BROWSER SUPPORT

CHROME	N/A
CHROME FOR ANDROID	44+
FIREFOX	N/A
SAFARI	N/A
EDGE/IE	N/A
IOS	N/A

# 10 USER TIMING API

## BESPOKE CODE BENCHMARKS

The User Timing API is an extension window.performance, enabling developers to mark points in their code and make measurements. While the Navigation Timing API allows for analysis of the page-load process, User Timing can be used to identify areas of code that are slower than desired.

Window.performance.mark lets developers store a high resolution. Window.performance.measure lets developers calculate the elapsed time between recorded marks.

**URL: [bit.ly/1MIIXwN](http://bit.ly/1MIIXwN)**

# 11 PAGE VISIBILITY API

## FOR LOST FOCUS IN WEBPAGES

With the advent of tabbed browsing, there's a good chance that users have a bunch of webpages open at any one time, but only one of those is in focus. The Page Visibility API fires events

when a webpage loses focus/comes into focus again, allowing developers to get smart about the experiences on the page that loses focus. This includes pausing streaming media, as well as avoiding unnecessary processing when it comes to continuous animations and even live media.

**URL: [mzl.la/1Fu21wh](http://mzl.la/1Fu21wh)**

# 12 BATTERY STATUS API

## TAILOR FOR BATTERY

This API exposes some basic but useful information about the status of a battery. This includes charging, a Boolean indicating whether the user's device is currently charging; chargingTime, which tells you how long until the battery will be fully charged; dischargingTime, which tells you how long until the battery is depleted and the device puts itself to sleep; and level, which is the current battery level on a scale between 0 and 1.0 - useful for displaying battery percentages.

**URL: [mzl.la/UIVKw7](http://mzl.la/UIVKw7)**

# 13 INDEXEDDB

## STORE DATA IN THE BROWSER

IndexedDB provides developers a low-level API to persistently store data to a browser. With IndexedDB, developers can store data locally first and sync with the remote server when a data connection becomes available. This can be especially useful when working with large datasets, which should only be transferred over Wi-Fi.

Like localStorage, IndexedDB is subject to storage limits and eviction criteria. The mechanisms behind it are complex and vary with the browser too.  
**URL: [mzl.la/1y2iyCj](http://mzl.la/1y2iyCj)**

## BROWSER SUPPORT

CHROME	31+
FIREFOX	38+
SAFARI	N/A

## BROWSER SUPPORT

CHROME	31+
FIREFOX	38+
SAFARI	8+

## BROWSER SUPPORT

CHROME	43+
FIREFOX	38+
SAFARI	N/A

## BROWSER SUPPORT

CHROME	31+
FIREFOX	38+
SAFARI	8+

# 14 DRAG & DROP API

USE DRAG AND DROP TO MAKE SORTING, REORDERING AND COLLECTING ITEMS A FAST AND EASY TASK

No longer do developers have to rely on third-party JavaScript UI frameworks like jQuery to enable the implementation of drag and drop. The HTML5 drag-and-drop API provides evented functions and HTML attributes, enabling most elements on any given page to be made natively draggable.

Native drag and drop will enable developers to add cheap drag-and-drop functionality to everyday tasks and applications, where before the overhead of libraries ensured it wasn't an option.

With a good implementation of drag and drop, it should be harder than ever to distinguish web views from native apps. There are seven events that cover the entire drag lifecycle. Just like mouse events, these can be bound to elements using `addEventListener`. A basic implementation of the drag life cycle would look something like this:

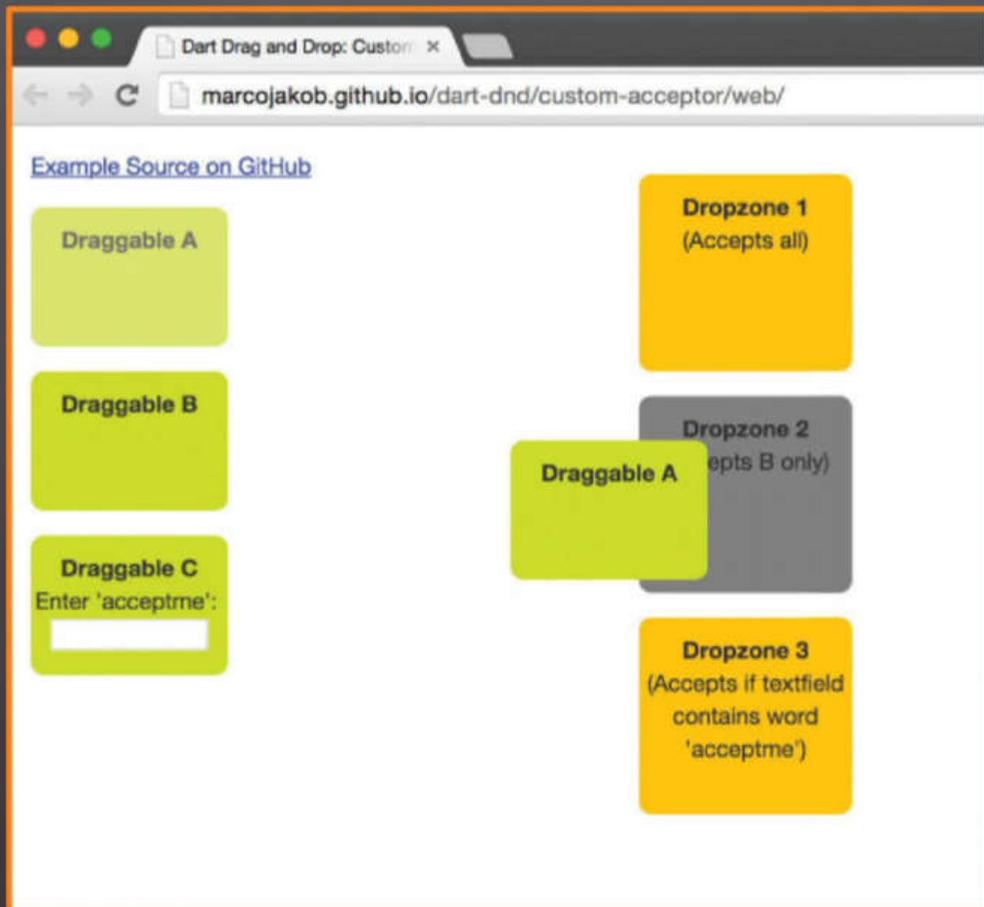
```
<div class="item" draggable="true"></div>
function dragStart(e) {
  this.style.opacity = '0.6';
}
function dragOver(e) {
  if (e.preventDefault()) {
    e.preventDefault();
  }
  e.dataTransfer.dropEffect = 'move';
  return false;
}
function dragEnter(e) {
  this.classList.add('dragging');
}
function dragLeave(e) {
  this.classList.remove('dragging');
}
function drop(e) {
  if (e.stopPropagation()) {
```

**COLLIDING ELEMENTS**  
 It's important for users to get high-quality visual feedback from drag-and-drop mechanisms. They should be confident of where the item being dropped will be placed.

```
e.stopPropagation();
}
return false;
}
function dragEnd(e) {
  item.classList.remove('dragging');
}
var i = document.querySelectorAll('.item');
i.addEventListener('dragstart', dragStart, false);
i.addEventListener('dragenter', dragEnter, false);
i.addEventListener('dragover', dragOver, false);
i.addEventListener('dragleave', dragLeave, false);
i.addEventListener('drop', drop, false);
i.addEventListener('dragend', dragEnd, false);
```

First the various functions are set up to handle events. `DragStart()` reduces the opacity of the dragged element for visual prominence. `DragEnter()` and `dragLeave()` manage the addition and removal of classes used to style the item when it's colliding with another item. `Drop()` stops all of the current event propagation. `DragEnd()` ensures the class used to style 'collisions' is removed.

URL: [mzl.la/1ENGVEq](http://mzl.la/1ENGVEq)



## SCENARIOS

### MANAGING CALENDAR ENTRIES

Rather than editing specific times and dates when managing a calendar, it's much easier to drag and drop appointments.

### LIST SORTING

Sorting lists is better done with drag and drop than the little arrow buttons that are sometimes seen on older websites.

### TASK PRIORITISATION

Prioritising tasks is an excellent use case for drag and drop, which enables the swift reordering of items.

### IMAGE SORTING

Visual sorting is also useful. Being able to sort images into two piles, such as 'suitable' and 'unsuitable', means that image organisation could be vastly improved by drag and drop.

## BROWSER SUPPORT

CHROME	31+
ANDROID	N/A
FIREFOX	38+
SAFARI	8+
EDGE/IE	8+
IOS	N/A

# 15 WEB WORKERS

## HAND COMPUTATIONALLY INTENSIVE TASKS TO BACKGROUND PROCESSES

Low concurrency CPU-intensive processing is something that JavaScript in the browser has never been good at due to its single-threaded nature. Operations that take a long time block the thread and stop other things from happening on the page - including the user interface.

Enter Web Workers. The Web Workers API can enable background threads to be spawned on the fly that can handle computationally expensive tasks without there being any detrimental effects to the main application thread.

Web Workers communicate with the main JavaScript thread through an exposed function called `postMessage`. Here's a basic example:

```
var worker = new Worker('worker.js');
worker.addEventListener('message', function(e) {
  console.log(e.data);
}, false);
worker.postMessage('I like cat food');
// worker.js
self.addEventListener('message', function(e) {
  self.postMessage(e.data);
}, false);
```

There are two files here: the first is the main thread which instantiates a worker from the other file, `worker.js`. The main thread starts listening for data sent by the worker. Then it sends data to the worker using `postMessage`, in this case a simple string. `Worker.js`

contains a function that listens for data sent by the main thread. The processing that would happen in the worker would be kicked off in this function, but for now the example just sends a message back to the main thread containing identical data.

URL: [mzl.la/1KAJDyK](http://mzl.la/1KAJDyK)

### SCENARIOS

#### SPREADSHEET APPLICATION

Spreadsheets can require an immense amount of calculation if they're large enough. Hand that computation to another thread.

#### VIDEO ENCODING

Video encoding is an intensive computational task and is not something that should be done in the main thread.

### BROWSER SUPPORT

CHROME	.....	31+
ANDROID	.....	4.4+
FIREFOX	.....	38+
SAFARI	.....	8+
EDGE/IE	.....	10+
IOS	.....	7.1+

# 18 WEBRTC SPECIFICATION

## CONNECTING DEVICES TO EACH OTHER

The basic premise is to connect devices with each other using a common platform where it's easy to craft rich experiences that leverage technologies - hence RTC (Real-Time Communications). The three APIs that WebRTC implements are: `MediaStream` (known as `getUserMedia`), `RTCPeerConnection` and `RTCDataChannel`. `MediaStream` provides access to streaming media from a user's device, like a camera and microphone. `RTCPeerConnection` enables audio and video calling as well as providing encryption and bandwidth management capabilities. `RTCDataChannel` is for peer-to-peer communication of generic data.

The `MediaStream` aspects of WebRTC are covered by the `getUserMedia` API section of this feature. `RTCPeerConnection`'s job is to facilitate streaming data between peers, but it doesn't define any protocols to do so. Instead, developers can choose any messaging protocol they desire, such as XMPP, to handle the signaling required.

The signaling channel is used to exchange three types of information between peers: media abilities, the resolution and codecs supported by a peer's web browser; network information, a peer's external IP address and port; and Session control for starting and closing communications as well as error reporting.

WebRTC has a third API called `RTCDataChannel`, which lets peers exchange miscellaneous data with low latency. This makes WebRTC a contender for low latency peer-to-peer applications or a decentralised version of Web Sockets.

URL: [webrtc.org](http://webrtc.org)

### SCENARIOS

#### DEVICE-AGNOSTIC VIDEO CHAT

WebRTC can bring video chat to almost any device with a browser, camera and microphone.

#### PEER-TO-PEER GAMING

Games designed without a centralised server can use WebRTC to connect peers with low latency.

#### PEER-TO-PEER FILE TRANSFER

WebRTC makes it possible to send large amounts of data between peers.

### BROWSER SUPPORT

CHROME	.....	31+
CHROME FOR ANDROID	.....	44+
FIREFOX	.....	38+
SAFARI	.....	N/A
EDGE/IE	.....	N/A
IOS	.....	N/A

# 16 POINTER LOCK API

## ENHANCE IMMERSIVE 3D EXPERIENCES

The premise of the Pointer Lock API is to provide access to raw mouse movement occurring beyond the constraints of the browser window as well as hiding the cursor. The API lends itself to first-person controls in games, as well as other interactive first-person experiences and experiences that require lots of mouse movement such as 3D editing tools.

Before the Pointer Lock API, full-screen experiences would run up against the edge of the browser window, or worse go beyond it - making it easy for users to be taken out of the experience.

URL: [mzl.la/1j9YZDr](http://mzl.la/1j9YZDr)

### BROWSER SUPPORT

CHROME	.....	31+
FIREFOX	.....	38+
SAFARI	.....	8+

# 17 VIBRATION API

## PROVIDE PHYSICAL FEEDBACK

As smart devices become more common for interacting with the web it makes sense to start taking advantage of their unique abilities - such as tactile feedback like that of vibration. Most modern mobile devices have vibration hardware. The vibration API offers applications the ability to access this hardware if it exists. The API is very straightforward:

```
window.navigator.vibrate(250);
```

This line of code will cause the device to vibrate for 250 milliseconds. If an array is passed to `vibrate`, it will vibrate and then pause for every other argument.

URL: [mzl.la/1MIJ77B](http://mzl.la/1MIJ77B)

### BROWSER SUPPORT

CHROME	.....	31+
FIREFOX	.....	38+
SAFARI	.....	N/A

# 19 WEB COMPONENTS

USE WEB COMPONENTS TO PACKAGE HTML, CSS AND JAVASCRIPT WIDGETS INTO REUSEABLE, ISOLATED PACKAGES

Like WebRTC, the Web Components specification is a collection of several separate technologies. Web Components are self-contained, reusable user interface widgets that leverage other open web technologies. Using already public Web Components is as easy as writing an import statement in an HTML page.

Web Components provide a way to package widgets built with HTML, CSS and JavaScript into reusable components - they're just as capable as anything else that's out there.

For years, developers have worked with widgets that aren't sandboxed from the rest of the DOM. The widget's styling sat with the rest of the CSS, the JavaScript with the rest of the JavaScript. This lack of sandboxing made it hard to extend existing widgets without accidentally regressing other parts of the code base. The four parts of Web Components that alleviate this problem are: Templates, Shadow DOM, Custom Elements and HTML imports.

**REMEMBER: IT IS NOT POLYMER**  
 Polymer is a Google framework based on Web Components technologies and is not required to make effective use of Web Components.

Templates are similar to templates in other third-party technologies like AngularJS. They enable markup to be defined, ready to be made use of later. Shadow DOM is the specific technology that solves the DOM sandboxing issue, whereas Custom Elements enable developers to create their own fully featured DOM elements. HTML Imports are similar to imports in other languages. They enable developers to import entire Web Components, including their CSS and JavaScript. While the four technologies in Web Components are supposed to be used in conjunction with one another, developers can select which parts of Web Components they need to use. The amount of things that can be achieved is broad. When thinking about Web Components retrospectively against a recent project, they could be applied to any self-contained feature of a webpage - allowing that new component to be imported anywhere in the project.  
**URL: [webcomponents.org](http://webcomponents.org)**

## SCENARIOS

### MULTISITE EVENTS WIDGET

Develop an events widget that lists events from an API dropped onto any site with one Import statement and a Custom Element.

### SEARCH WITH AUTOCOMPLETE

Take a search with autocomplete, such as Google's Places, and then turn it into a reusable component.

### IMAGE CAROUSEL

Implement a carousel in a Web Component and never write another carousel. Import the old one that uses Custom Elements.

### ACCORDION COMPONENT

You can turn any piece of markup into an accordion by importing an accordion Web Component and surrounding the item in a Custom Element.

## BROWSER SUPPORT

CHROME	41+
CHROME FOR ANDROID	44+
FIREFOX	N/A
SAFARI	N/A
EDGE/IE	N/A
IOS	N/A

# 20 SHADOW DOM

ISOLATE PRESENTATION FROM CONTENT, ALLOWING FOR MORE FLEXIBLE AND ROBUST FRONT-END ARCHITECTURES

The Shadow DOM enables developers to encapsulate DOM elements from the rest of the page. When used in conjunction with templates, this enables the Holy Grail of separation of concerns with regards to content and presentation. Before, a developer may have written something like this when wanting to share directions to their house:

```
<style>
.directions-widget { ... }
</style>
<article class="directions-widget">
<header>
<h2>Directions to my house</h2>
</header>
<p>Turn left</p>
</article>
```

But with Shadow DOM, they can write this:

```
<p id="directions">Turn left</p>
<template id="directionsTemplate">
<style>
```

```
</style>
<article class="directions-widget">
<header>
<h2>Directions to my house</h2>
</header>
<p class="directions">Turn left</p>
</article>
</template>
<script>
var s = document.querySelector('#directions').
createShadowRoot(),
t = document.querySelector('#directionsTemplate'),
c = document.importNode(t.content, true);
s.appendChild(c);
</script>
```

The presentation code here is now inside a template, so it won't be rendered by the browser. The script at the bottom clones the template to the Shadow DOM, with the presentation initially intended.

**URL: [bit.ly/1WsX3nM](http://bit.ly/1WsX3nM)**

## PARAMETERS

### ELEMENT.SHADOWROOT

This is a read-only property that represents the youngest shadow root that is hosted on the element.

### <CONTENT SELECT="">

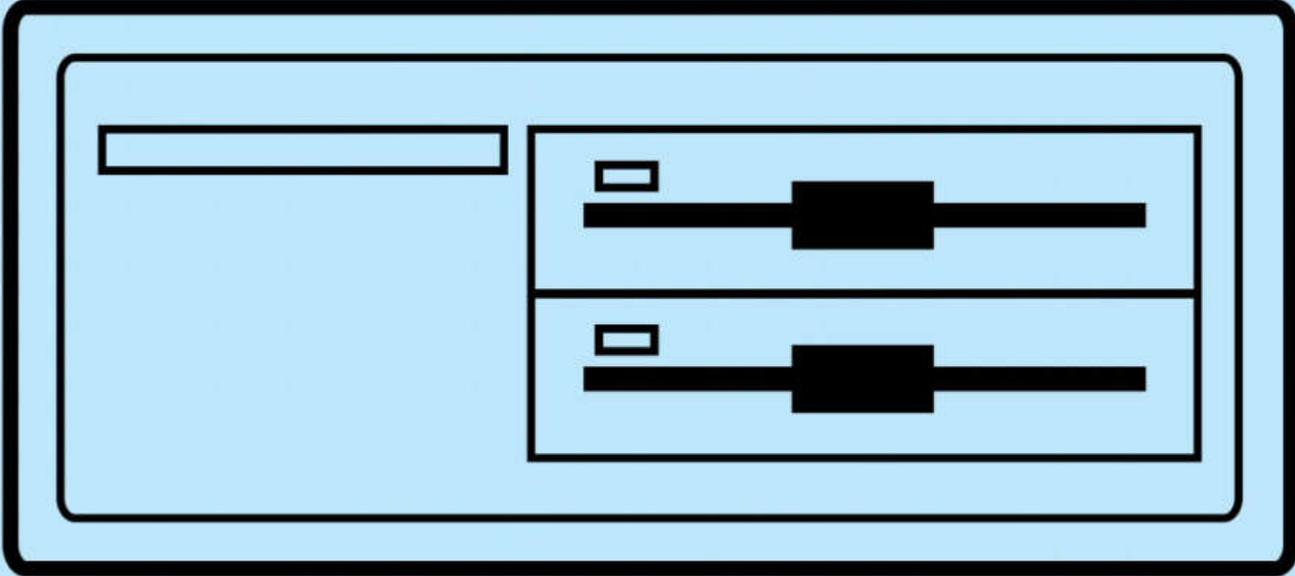
The content element used inside of the Shadow DOM is an insertion point, only to be used in Web Components

### <SHADOW>

Much like the <content>, the <shadow> parameter is also an insertion point but it can also be used for older shadow roots on the same shadow host.

## BROWSER SUPPORT

CHROME	31+
ANDROID	4.4+
FIREFOX	N/A
SAFARI	N/A
EDGE/IE	N/A
IOS	N/A



# Master Google's best APIs

THE SEARCH GIANT IS A TREASURE TROVE OF APIS, READ ON FOR THE BEST ONES

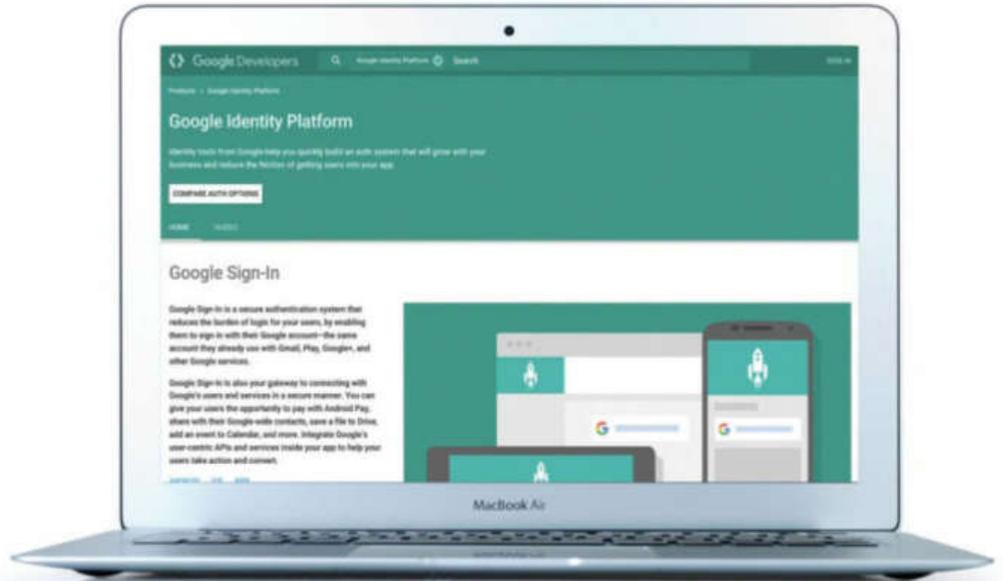
Software is a unique product in that it can be multiplied with minimal cost. Once the development has been footed, adding new installations tends to be an issue of purchasing extra hardware. Google has used this very approach to produce a variety of APIs, providing web designers access to building blocks used for the realisation of its own services. Some of them are, fortunately for us, made available for free: Google willingly foots the bill in order to tie developers closer to its own ecosystem.

In addition to the eventual introduction of monetisation (well-established APIs tend to stop being free when enough people use them), Google furthermore profits from the ability to get its APIs stress-tested by third parties without needing to pay them for their work.

Another, possibly more sinister, benefit though involves additional access to customer data. If a website generates graphs and other features using Google's services, then the search engine can track user movements and site retention times more efficiently. It would not surprise us if this data somehow found its way into search engine rankings. For example, a scammer with a well-placed but content-poor website could give himself away via the very short visit duration.

But let us throw caution to the wind for now though - in all fairness, the possibilities offered are far too great for us to simply pass them up. Look forward to effortlessly creating diagrams and graphs, handling signins automatically, renting databases on an as-needed basis over the next few pages in our list of top APIs. If you can name it, it's likely that Google already has you covered.

**“Google willingly foots the bill in order to tie developers closer to its own ecosystem”**



## Registering for accounts

**API: Google Sign In**

**developers.google.com/identity/sign-in/**

**Cost: Free**

**Making users sign in is a sure-fire way to lose them: creating a new account is an extraordinary level of hassle.** Many users will simply switch off or close the tab at the sight of such a page - they want to get content there and then, without having to wade through username and password boxes. But by using Google's sign-in system, we can mitigate the problem by permitting users to log in with their already-available Google account.

Getting started with most Google APIs requires you to sign up for an account in the Google Developer's console (**console.developers.google.com**). Next, create a project and open the subsection APIs&auth and click the Credentials subtab. Then, create an Auth ID. If you created a new project, the Developer Console will now ask you to configure the Consent screen: the information entered here will be displayed to the users as your app authenticates. Then, you just have to create a client ID for a web application - don't forget to fill out the authorised URL fields with your testing and deployment URLs in order to prevent Google from blocking the app. Google will then reward your efforts by generating a client ID and a client secret.

In the next step, a test must be hacked up. Its structure is relatively simple - it loads a script, and runs an onSignIn-Method when the login process is

completed:

```
<html>
<head>
<script src="https://apis.google.com/js/platform.js" async defer></script>
<meta name="google-signin-client_id"
content="YOUR_CLIENT_ID.apps.googleusercontent.com">
</head>
<body>
<script type="text/javascript">
function
onSignIn(googleUser) {
var profile = googleUser.
getBasicProfile();
console.log('ID: ' +
profile.getId()); // Do not
send to your backend!
console.log('Name: ' +
profile.getName());
console.log('Image URL: ' +
profile.getImageUrl());
console.log('Email: ' +
profile.getEmail());
}
```

```
</script>
<div class="g-signin2" data-
onsuccess="onSignIn"></div>
</body>
</html>
```

This code is remarkable as the log-in button is generated via a predefined <div> class, which takes its properties from the header. Please be aware though that the sign-in process will work only if the HTML file is served from one of the URLs specified - testing this file requires you to set up a local web server.



**Don't abuse data**  
Misuse of Google-sourced data always gets media attention. Be sure that their legal team will set out to punish the culprit harshly.

# Manage & Drive APIs

<b>API: Task manager</b>
<a href="http://bit.ly/1KA6uJE">bit.ly/1KA6uJE</a>
<b>Cost: Free</b>

Google provides an advanced to-do list management system for each and every owner of a Google account. Third-party applications can access this to-do list in order to add, remove and manage tasks at hand. Developers should take note of this API due to Google not offering Android and/or iOS clients of their own.

<b>API: Accessing Drive</b>
<a href="http://bit.ly/1YBP6yH">bit.ly/1YBP6yH</a>
<b>Cost: Depends on usage</b>

Google Drive is among the widest-spread cloud storage services, which can be accessed via a dedicated API. Developers used to normal file systems need to rethink their approach; Drive uses a file-ID-based storage scheme. Both files and folders are represented by a globally unique ID, which must be traversed to find eventual children.

<b>API: Google Analytics</b>
<a href="http://google.com/analytics/">google.com/analytics/</a>
<b>Cost: Depends on usage</b>

Integrating analytics into a website and/or an app is very useful. You can also prepare yourself for a never-ending flow of all kinds of useful data about your customers and their behaviour in the web property when under testing. Google Analytics also collects system data which can be used to improve targeting, resource allocation and feature deployment.

<b>API: Google Picker</b>
<a href="http://developers.google.com/picker/">developers.google.com/picker/</a>
<b>Cost: Free</b>

The above-mentioned ID-based file system makes entered paths all but worthless. Fortunately, this API provides your users with a CommonDialog-like experience. You can tailor the displayed content with special properties: for example, a photo management application could drop the user off in his webcam picture folder.

# Get your games in store

<b>API: Google Game Services</b>
<a href="http://bit.ly/1iMdSvO">bit.ly/1iMdSvO</a>
<b>Cost: Free</b>

Keeping players loyal has become more and more difficult. As time has passed by, both achievements and leaderboards established themselves as 'tools of the loyalty trade'.

Implementing both of these by hand is not complex: in today's fast-turning game market, the time needed should better be invested into more marketing. Thus, Google's offerings come at the right time: Game Services is available to native, Android, iOS and generic C++ apps.

In all cases, the journey to a Game Services-enabled product begins in the Google Play Developer Console found at [play.google.com/apps/publish/signup/](http://play.google.com/apps/publish/signup/). Developers who have not signed up for the Play Store yet will find themselves coughing up \$25 - Google insists on account verification. In the next step, create a new game in the Game Services tab. Finally, create an Auth ID and proceed to setting up leaderboards and/or achievements as needed.

The actual implementation begins with an Auth 2.0 login process according to the steps outlined in [bit.ly/1L8CiMo](http://bit.ly/1L8CiMo).

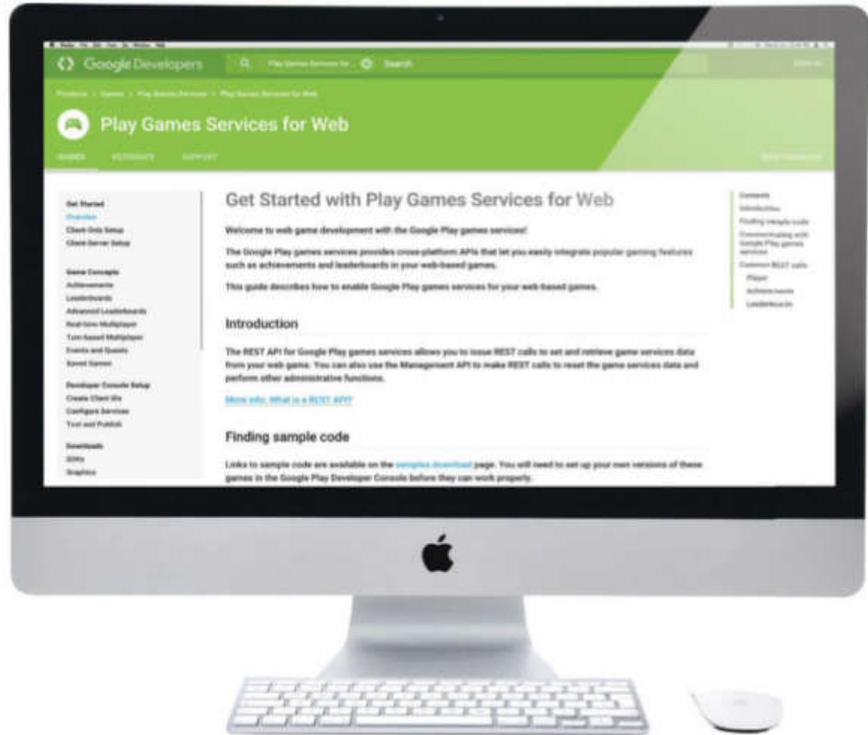
Once this is out of the way, registering success on an achievement can be accomplished by firing off a POST request based on the scheme ([bit.ly/1L8CjQn](http://bit.ly/1L8CjQn)).

By and large, leaderboards will behave in the same way: it will specify criteria and make sure that the player's competitive sense is activated. Google provides a list of interesting REST calls, such as for displaying a leaderboard or submitting a finished game score, at [bit.ly/1KBP7it](http://bit.ly/1KBP7it). Play Services aren't limited to serving 'static' content. The system can also be used to handle

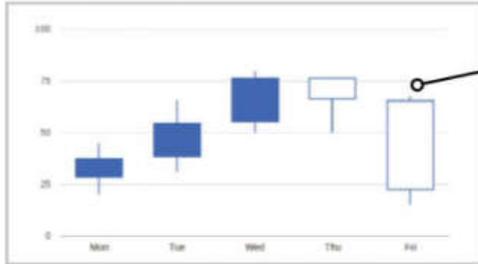
communication between players: real-time synchronisation is offered only to native apps, while turn-based game management is offered to web and native apps.

In essence, synchronising a game involves the frequent transmission of JSON objects with state information. Players are grouped into matches by the system, and once a game has been established, turns are taken until one of the game instances reports victory.

Cross-platform games have recently picked up steam, which has been great for gaming fans who love to see their platform of choice take the lead over a hated competitor. By default, Google Play Services mingle players independent of their operating system - an almost ideal situation.

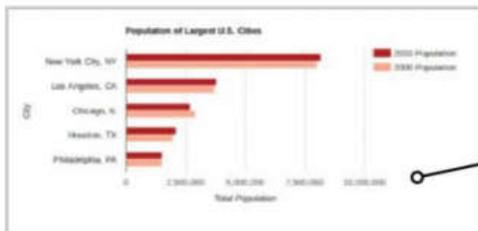
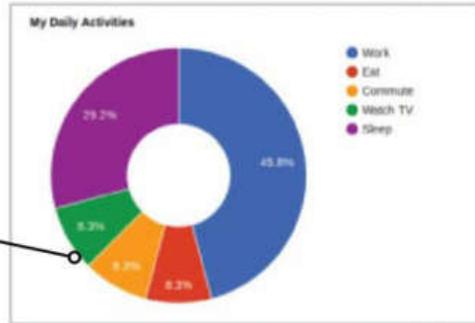


# Fast custom charts



Candlestick charts are especially useful for technical analysis: they display open, high, low and close in one compact diagram

Doughnut charts are but a small modification of the pie chart: the hole in the middle saves ink when large diagrams are to be printed



Bar charts can be considered the classic chart. It's no surprise that they're still so widespread with its easy-to-read information and a key to distinguish data

Rendering regional diagrams is considered a black art. Google's library makes it really easy - it even provides the map outline for you



<b>API: Diagrams for everybody</b>
<a href="http://developers.google.com/chart">developers.google.com/chart</a>
<b>Cost: Free</b>

A chart says more than a thousand words. The widespread implementation of the <canvas> tag has permitted the creation of chart-rendering libraries which do their magic in the browser of the customer's workstation. Copy the file to your workstation and load it in a browser of choice in order to feast your eyes on the bar chart contained within:

```
<html>
<head>
<script type="text/javascript" src="https://www.google.com/jsapi"></script>
<script type="text/javascript">
google.load('visualization', '1.0',
{'packages':['corechart']});
google.setOnLoadCallback(drawChart);
function drawChart() {
var data = new google.visualization.
DataTable();
data.addColumn('string', 'Good');
data.addColumn('number', 'Amount');
data.addRows([
['Silver', 300],
['Gold', 100],
['Platinum', 12],
]);
var options = {'title':'Wealth allocation
```

```
plan',
'width':640,
'height':480};
var chart = new google.visualization.
PieChart(document.getElementById('chart_div'));
chart.draw(data, options);
}
</script>
</head>
<body>
</body>
</html>
```

Google insists that the packages constituting the Charts API must be downloaded freshly on each page-load via the Google JS loader. In the next step, a data object is created. Google provides a ready-made DataTable class with a set of convenience functions which make entering data really easy.

The actual rendering process is then fired up by invoking the draw method of the chart object. Charts implements about two dozen different chart types - they differ in data format, invocation and load request. Start out by visiting [bit.ly/1VcR8AZ](http://bit.ly/1VcR8AZ): Google provides an instructive example for most diagrams. Be aware that the usage of Google Charts requires an active internet connection on your client's workstations.

# Maps, fonts and design

<b>API: Material Design Lite</b>
<a href="http://getmdl.io">getmdl.io</a>
<b>Cost: Free</b>

JavaScript GUI stacks tend to be hit and miss. Google's Material Design Lite is a lightweight implementation of Android's Material Design theme, based on HTML5, CSS and a bit of JavaScript. It comes with a set of widgets including templates, components and themes. These are easy to integrate, customise and download once you understand the structure used. Since Material Design Lite can be self-hosted, individuals paranoid about hosting will not be dissuaded from using it.

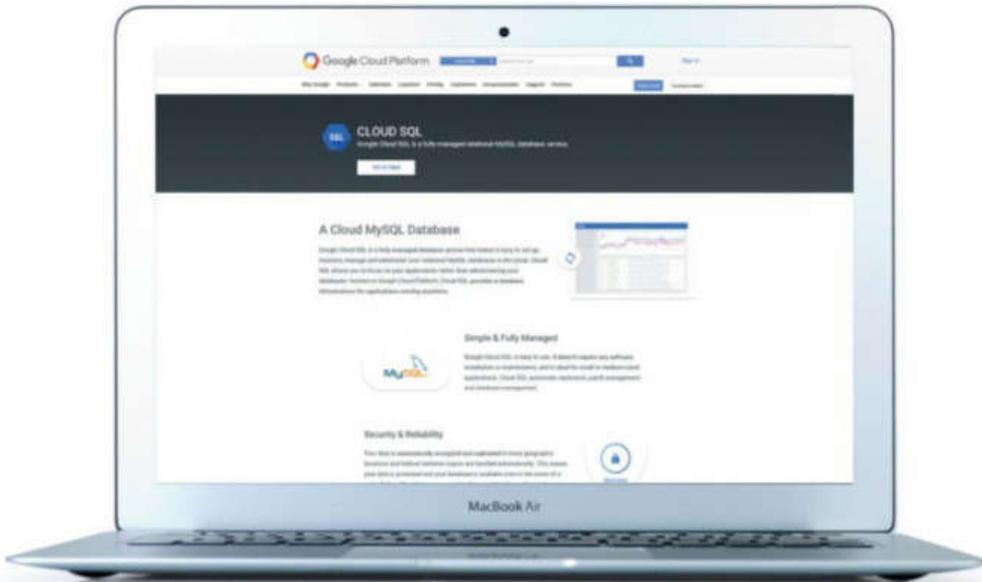
<b>API: Google Maps</b>
<a href="http://developers.google.com/maps/web/">developers.google.com/maps/web/</a>
<b>Cost: Depends on usage</b>

Rendering maps by hand is not for the faint-hearted. If you don't have a solid understanding of data management and matrix math though, it might be best to read up on this one carefully before giving it a shot. Google permits you to access its mapping system's features and functionality via a variety of APIs. Initially usage is free however, once you exceed 25,000 map loads per day for 90 days, the use of some APIs will require payment.

<b>API: Fonts API</b>
<a href="http://developers.google.com/fonts/">developers.google.com/fonts/</a>
<b>Cost: Depends on usage</b>

Font was extended to the web the moment browsers started to be able to parse custom fonts. Google's font repository provides developers with a large selection of free-to-use fonts. Deploying them is as easy as embedding the requested CSS file: `<link rel="stylesheet" type="text/css" href="http://fonts.googleapis.com/css?family=Tangerine">`

```
<style>
body {
font-family: 'Tangerine', serif;
font-size: 48px;
}
</style>
```



## High-performance data

<b>API: Google Cloud SQL</b>
<a href="https://cloud.google.com/sql/">cloud.google.com/sql/</a>
<b>Cost: Billed</b>

As systems become larger, databases transform themselves into bottlenecks. Running large, high-performance server systems is a science of its own: if you don't have an expert on databases in-house, outsourcing it is more sensible.

Google is the master of big data: managing its search index is an exercise in high-performance databasing. Getting started with a Cloud SQL database is easy: log into the developer's console and create a new Cloud SQL instance in the project. In the next step, set up which IP ranges are permitted to interact with the system.

From a user's point of view, Google Cloud SQL-hosted databases show next to no differences to a normal database: you can connect to them like to any other SQL instance. Administrators will be happy to find out that many common DB tasks can be performed from the graphical backend in the Google Developer Console. Setting up replication to a local database host no longer requires the use of arcane SQL commands – even though SQL wizards can, of course, work their magic on the database via the MySQL client.

Google provides two different billing models, which also affect availability and uptime. An instance billed on a per-use basis is shut down when clients leave it alone for 15 minutes. Fixed packets, on the other hand, tend to be active during their entire lifetime, shutting down only after more than ten hours of inactivity.

## Get the best out of YouTube

<b>API: Power to YouTube!</b>
<a href="https://developers.google.com/youtube/">developers.google.com/youtube/</a>
<b>Cost: Free</b>

Streaming video is a sure-fire way to miff your hosting company. Google provides a variety of APIs which permit you to use YouTube as a storage and management system. Embedding a player into a website can be accomplished with a bit of JavaScript:

```
var player;
function onYouTubeIframeAPIReady() {
  player = new YT.Player('player', {
  height: '390',
```

```
width: '640',
videoId: 'M71c1UVf-VE',
events: {
  'onReady': onPlayerReady,
  'onStateChange':
  onPlayerStateChange
  }
  });
}
```

This is a part of the features and you can also use this API to permit users to sign in to YouTube. Live streaming events can also be set up via YouTube in a relatively, more complex process.

## Pay, date & find APIs

<b>API: Calender</b>
<a href="https://bit.ly/1MJbfaE">bit.ly/1MJbfaE</a>
<b>Cost: Free</b>

Google Calendar initially got little attention, but stepped into the limelight as Android smartphones and their syncing capability became widespread. The JavaScript API lets applications interact with the customer's calendar data. Events can be added, removed and edited – a stocks app could use this to add dividend information to a smartphone. Google implements the Calendar API as a REST service. Interactions with the server take place by sending predefined JSON strings: JavaScript developers must make do without the abstraction classes found in SDKs for other languages.

<b>API: Android Pay</b>
<a href="https://bit.ly/1L6kz8b">bit.ly/1L6kz8b</a>
<b>Cost: Not available yet</b>

The Android Pay service takes Google Wallet to the real world. It is intended to streamline payment processing both in apps and in physical high-street stores. As users get accustomed to the way the system works, conversion rates should increase significantly. Sadly, all rumoured release dates for Android Pay have, so far, slipped – one can not be sure when the service will finally launch.

<b>API: Geocoding made easy</b>
<a href="https://bit.ly/1FbcYDa">bit.ly/1FbcYDa</a>
<b>Cost: Free with usage limits</b>

Real-world addresses are sensible to humans: geodesic applications tend to work better with coordinates.

Google's Geocoding API is dedicated to this conversion process: users can enter a street name, and then your app will get a pair of latitude and longitude data in return. Be aware though, as Google always limits apps to ten requests per second.

**Static charts**

Google's Image Charts API can enable you to create diagrams by embedding an `<img>` tag with a specially formatted `src` attribute.

# FOR THE GNU GENERATION

[www.linuxuser.co.uk](http://www.linuxuser.co.uk)

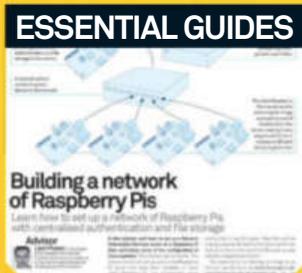


## LinuxUser & Developer

Available from all good newsagents & supermarkets today

**ON SALE NOW:**

» Windows apps with Wine » Systems programming » Pi music visualiser



# BUY YOUR ISSUE TODAY

Print edition available at [www.imagineshop.co.uk](http://www.imagineshop.co.uk)

Digital edition available at [www.greatdigitalmags.com](http://www.greatdigitalmags.com)

Available on the following platforms



[facebook.com/LinuxUserUK](https://facebook.com/LinuxUserUK) [twitter.com/LinuxUserMag](https://twitter.com/LinuxUserMag)

# Deploy your web apps to Heroku

Set up SSH keys spinning up an instance and deploy to the cloud with command-line Git





**We all enjoy making things every now and then.** This can take any form – a linter, image converter or even a web service that sends you a picture of a cat whenever someone hits a button.

Often made for ourselves, sometimes, these tools pick up traction and other people start to use the thing you've made; you've solved a problem that other people have, congratulations! But this success has brought you a problem in itself, how are you going to keep your servers up with all of these new people using your shiny thing?

Shared web hosting is designed to be used by a couple of hundred, maybe even a few thousand people at the same time. It's not going to be able to stand up to something going viral – at least – not for long and that's assuming your web project is relatively small. If you've made something that's, let's say, 2MB in size, it doesn't seem like too much for your provider to handle, does it? What if 10,000 people access your site in one day? That's 20GB in bandwidth you've got to provide! Shared hosting is not going to cut the mustard. You could provision a server and make it bigger as the site gets bigger, but that means you've got to select a provider, access the server, configure it for your app and, more often than not, scale it manually. This is not good enough.

This is where Heroku comes in. Heroku is a cloud platform that delivers your app for you, it scales whenever you like and it has Node, Ruby, PHP and Python built into it and ready to go! This tutorial is going to walk you through setting up a Heroku account, getting SSH keys all in order, configuring a Node.js app for deployment and then firing it off to Heroku to be run.

## 1. Create an account

Head on over to [heroku.com](https://heroku.com) and then simply click the Sign Up button to create a new account. Check your

inbox now for an email confirming that you want to sign up and create a strong password. If you're worried about Heroku costing you something, fear not because there's a free tier for you to experiment, explore and learn from. This free tier is the one that we'll be using in this tutorial.

## 2. The dashboard

Once you've logged in to your dashboard, it's here that we can create, manage, deploy and destroy our apps with the help of the Heroku platform. If you click your email address in the top left of the dashboard, you'll see a dropdown with the option Manage Account. Don't click it, but take note of where it is located for now as we'll be using it in a little while

## 3. The Heroku Toolbelt

In development, the Terminal is a powerful tool. Heroku has created a Toolbelt to help us get the most out of Heroku through the command line. Most of this tutorial will be done in the CLI (command-line interface), so head to [toolbelt.heroku.com](https://toolbelt.heroku.com), select the right Toolbelt for your operating system and simply follow the instructions to install it.

## 4. Log in with the Toolbelt

Once the Toolbelt has installed, you should now open your terminal (or the equivalent for your operating system) and simply enter:

```
heroku login
```

## 5. Heroku and SSH Keys

In the next few steps, we will now go over creating SSH keys on a Unix-based system (Linux or OS X). If you're familiar with this process though, you can just skip over them and generate the SSH keys as you like, otherwise,

you can read on and follow what they say. SSH keys are user credentials that don't involve a password. Instead though, it uses public-key cryptography to generate a secure way of authenticating a user to a service, and we're going to do just that with Heroku. This will spare you having to type in your password every single time that you want to do something.

## 6. Create an SSH Key

In terminal, enter the following with the email address you used to sign up to Heroku:

```
ssh-keygen -t rsa -b 4096 -C "[YOUR@EMAILADDRESS.COM]"
```

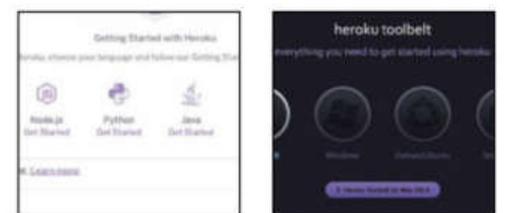
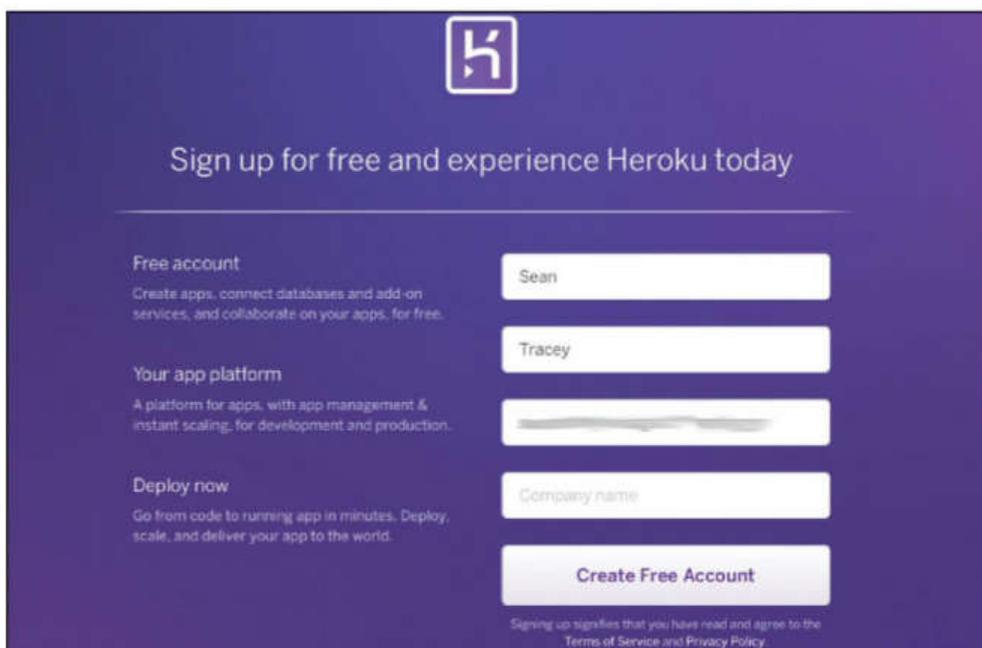
A new private/public key will be generated for you. You'll be asked if you want to store the keys anywhere specific, just hit 'enter' and accept the defaults until you're asked to enter a passphrase, choose something secure but memorable – it's not easy to change this one!

## 7. Enable the SSH Keys

To get your system to actually use your new SSH keys, we will need to add them to the SSH agent. After that we can add them to Heroku. Enter the following command, you'll be asked for the passphrase you used when

## Heroku's tiers

Heroku has four pricing tiers: Free, Hobby, Standard and Performance – each one is more powerful and expensive to run than the last. We're using Free, but if you're deploying something small that you want to run 24/7 (the free tier has to spend six hours offline daily) then Hobby is only \$7 (£4.60) monthly per instance.



### Left

Signing up is easy. Heroku is for single users and businesses alike, but don't be put off by them asking for a business name, you don't need one

### Top left

From the dashboard, all things Heroku can be found and controlled. Take some time to look around and try out the various options

### Top right

The Heroku Toolbelt lets us control every aspect of Heroku and our apps from the CLI. It's the most efficient way to interact with Heroku

## Developer tutorials

# Deploy your web apps to Heroku

creating the new keys. The SSH key will then be ready to be used by your computer and it will also have been copied to your clipboard.

```
eval "$(ssh-agent -s)" && ssh-add ~/.ssh/id_rsa && pbcopy < ~/.ssh/id_rsa.pub
```

### 8. Add the SSH key

Remember that Manage Accounts button we told you to take note of earlier? It's time to press it. Head back to the Heroku dashboard ([heroku.com](https://heroku.com) will redirect you there if you're still logged in) and then click the Manage Account button. Now just scroll down until you see SSH Keys, click edit and then paste the SSH key into the input (the last command that we entered also copied it into our clipboard for us).

### 9. Alternative method

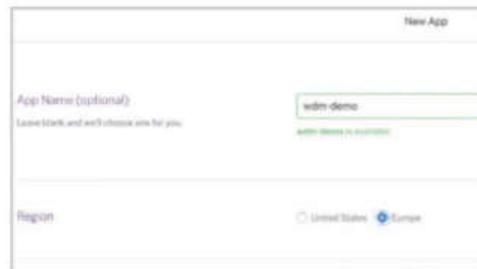
If all that GUI goodness is not your way of doing things, you can upload the SSH key to Heroku with the command-line interface. Simply head back to your terminal and enter:

```
heroku keys:add
```

You'll be asked if you want to upload your key to Heroku. Hit 'Y' for yes.

### 10. Create a new project

On your Heroku dashboard there is a + sign in the top-right corner. Click it now to create a new Heroku app. You'll then be given a form asking you to enter a name and whether you want your server to be in the US or Europe. If you don't enter a name, one will be generated for you, so it's up to you whether you want to give your app a name.

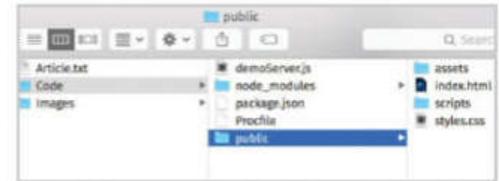


### 11. Prepare for deployment

If you have a project ready that you'd like to test deploying to Heroku, cd to the root folder of that project now. Otherwise, there is a demo project that you can grab from our FileSilo downloads. Once you've made your way to your chosen project in Heroku, enter the following commands:

```
git init
heroku git:remote -a name_of_your_heroku_app
```

When those commands have completed, we will have created a new Git repo with our Heroku app as a remote. With this, we can use SSH and Git to deploy our apps to Heroku with a Git commit.



### 12. Our demo app

Our app is a simple Node.js/Express server, delivering files in our 'public' folder to whomever browses to /. One thing to note is the port binding on line 7 of demoServer.js: process.env.PORT || 8080. Process.env.PORT lets Heroku choose the port it wants to make our app available on as it can change per deploy or instance.

### 13. Deploy to Heroku

We can also deploy with a Git commit. Now that we have Heroku set up as a remote Git repository, by pushing new code to it, Heroku's build process will be triggered and will deploy our app for us. Let's give it a go now:

```
git add .
git commit -m
git push heroku master
```

You'll see Heroku building, testing and then finally deploying our app to its platform. If all has gone well, you'll see something like

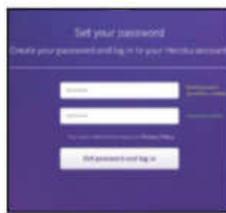
```
Launching... done, v1
remote: https://your_heroku_app.herokuapp.com/ deployed to Heroku
```

### 14. Debugging errors

Except you probably won't see that everything has gone right, because we've deliberately added an error. So how do we debug errors on our Heroku instances? If a Heroku build fails, it will refuse to deploy the broken code

## Work with Procfiles

When you're working on a project with multiple team members, it's not always a dead cert that every one is going to push to Heroku with the same provisioning settings. By using a Procfile and including it in your shared Git repo, you can be certain that every time a team member pushes a deployment to Heroku, it will run on what it's meant to.



#### Top left

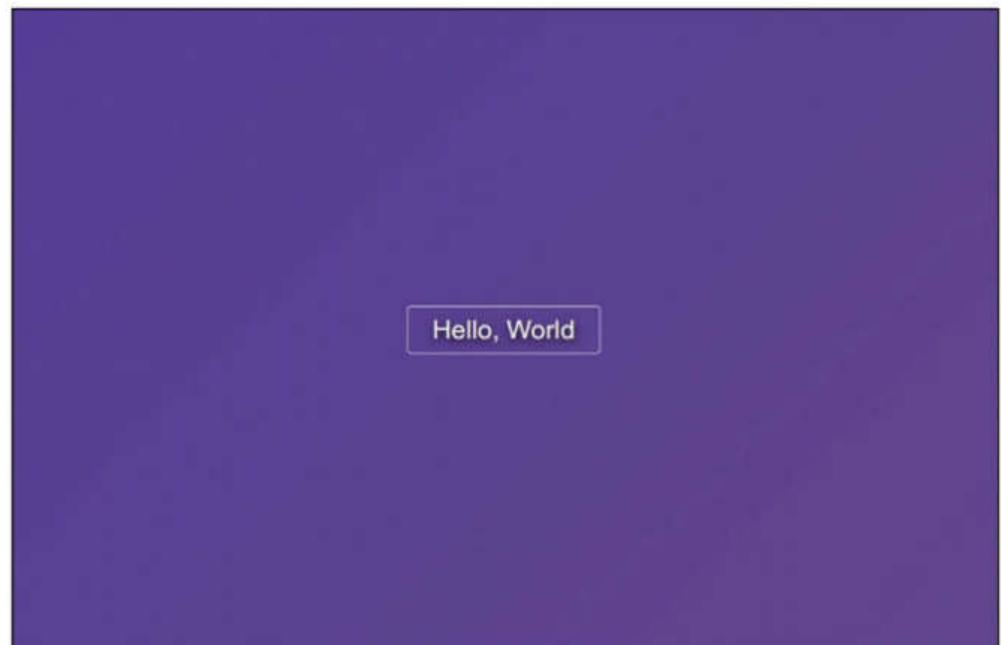
Once you have your SSH key, adding it is simple. Just click on Manage Account and scroll down until you see the option. Click the tab and then paste your key in

#### Top right

Heroku won't cost you money straight off of the bat, but if someone gets a hold of your account it could cost you dearly. Strong passwords are a must

#### Right

Our app is just a simple static page being delivered by our Node.js app with a simple CSS animation, but gosh, doesn't it look friendly?

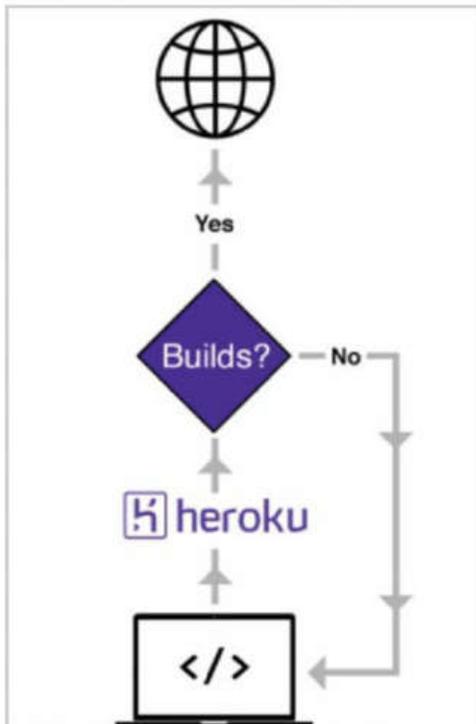




### Dyno types

Heroku has a bunch of tiers, but these tiers comprise dyno types, which are the kinds of machines (specs if you will) that you can run. When scaling your services, you can choose which of these dynos you want to use, as each use case may require different kinds of services. For example, let's say your web service just got some overnight fame on one of the social networks we all love to loathe, your standard instance is now starting to buckle under the pressure - you need to scale now! But even with the hundreds of hits you're getting, your standard instance is still holding its own. Scaling up to a performance instance would almost certainly solve your problem, but it's also probably overkill as this amount of traffic might not last that long.

in favour of previously working code. But that only works if it's a compile-time error. If the error is a run-time error, it won't break until after it's deployed. To find out where the error may lie, you can enter 'heroku logs --tail' and you'll see the latest entries for your Heroku server.



### 15. Fix the error

If you look at our logs, the error that was deliberately made is simple. Our Node.js app is trying to listen on a port reserved by the system. Now just open demoServer.js and change line 7 so that it reads:

```

// Old
// port = 15 || process.env.PORT || 8080;

// New
port = process.env.PORT || 8080;

> WDM-DEMO-APP@1.0.0 start /app
> node demoServer.js

npm ERR! WDM-DEMO-APP@1.0.0 start: `node demoServer.js`
npm ERR! Exit status 8
npm ERR!
npm ERR! Failed at the WDM-DEMO-APP@1.0.0 start script.
npm ERR! This is most likely a problem with the WDM-DEMO-APP
npm ERR! not with npm itself.
npm ERR! Tell the author that this fails on your system:
npm ERR!   node demoServer.js
npm ERR! You can get their info via:
npm ERR!   npm owner ls WDM-DEMO-APP
npm ERR! There is likely additional logging output above
npm ERR! System Linux 3.13.0-61-generic
npm ERR! command "/app/.heroku/node/bin/node" "/app/.her
npm ERR! cwd /app
npm ERR! node -v v0.10.40
npm ERR! npm -v 1.4.28
npm ERR! code ELIFECYCLE
npm ERR!
Server started.
Available on localhost:15

events.js:72
  throw er; // Unhandled 'error' event
  ^
Error: listen EACCES
    at errnoException (net.js:905:11)
    at Server._listen2 (net.js:1024:19)
    at listen (net.js:1065:10)
    at Server.listen (net.js:1139:5)
    at Function.app.listen (/app/node_modules/express/li
    at Object.<anonymous> (/app/demoServer.js:23:5)
  
```

### 16. Deploy the fix

Now that we've fixed our app, we can try and redeploy it to Heroku. There's no special procedure for this, simply commit the modified files for a Git push and then push to the Heroku origin.

```

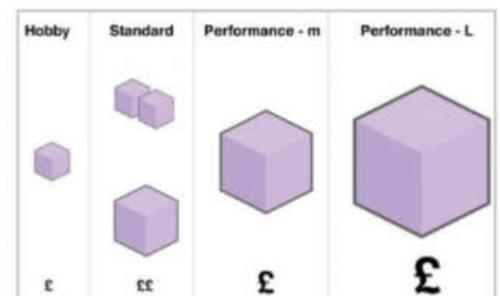
git add .
git commit -m "Fixed server port issue"
git push heroku master
  
```

### 17. Scale your web service

By default, Heroku will start your apps running on the 'web' tier of its service. This is the least powerful of the tiers available, but it's also free. Let's say you have an overnight hit on your hands, how do you scale your app to handle all of these new people wanting to use the great thing you've made? It's pretty simple, you can just enter:

```
heroku ps:scale web=2
```

...in your command-line interface. That will spin up two web-scale instances of your Heroku app and will split the



## Developer tutorials

# Deploy your web apps to Heroku

users between them - thus, each server will handle half of the load.

### 18. Procfiles and you

Let's say that you wanted to deploy an app to Heroku and you didn't want to worry about the provisioning of instances, or perhaps you needed to execute a different command to run your node app on a Heroku server (like installing and running Bower or Gulp, for example). These are the functions that the Procfile is for. Think of a Procfile as a package.json for Heroku instances. It lives in the root of your Heroku project folder, is called Procfile, and whenever you deploy your app to Heroku, the commands inside of it are the commands that will then be used to build and run your shiny new service. DemoServer.js begins the command that runs our server (as defined in our package.json), you can have the following execute in its place.

```
web : npm install bower && bower install &&
node demoServer.js
```

## Heroku hardware

With Heroku, we don't have to provision machines or set up environments. So much hard work must have gone into building an infrastructure. It may surprise you to learn that Heroku doesn't have its own hardware - it runs on AWS (Amazon Web Services), which, in a way, makes Heroku a kind of API for the Amazon web platform. This is known as SaaS (software as a service) business model.

## Code library

These are some typical modules that you would probably use in a Node app. Any module included in your package.json will also be installed by Heroku when you deploy your project.

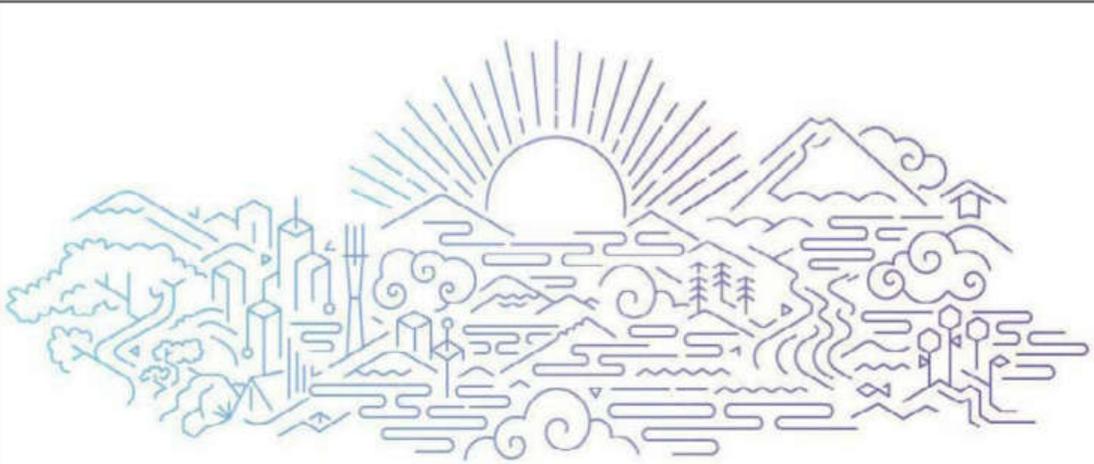
Our demo app is a simple, static webpage. This line says that whenever someone hits the '/' path of our web domain, every file and resources that we will be accessing will come from the 'public' folder in our project.

This is a simple Express route. If you want to process some information or give a specific resource a special URL, you can do that here. If you go to your Heroku app address and add '/hello' to the end, you'll see "Hi!".

```
var express = require('express'),
    app = express(),
    http = require('http'),
    fs = require('fs'),
    querystring = require('querystring'),
    request = require('request'),
    port = 15 || process.env.PORT || 8080;
for(var _ = 0; _ < process.argv.length; _ += 1){
  if(process.argv[_] === "--port" || process.argv[_] === "-port" ||
  process.argv[_] === "-p"){
    if(process.argv[_ + 1] !== undefined){
      port = process.argv[_ + 1];
      break;
    }
  }
}
app.listen(port);
app.use(express.bodyParser());
app.use(express.static(__dirname + '/public'));
app.use('/images', express.static(__dirname + '/images'));
app.use(express.cookieParser());
app.all('*', function(req, res, next) {
  res.set('Access-Control-Allow-Origin', '*');
  res.set('Access-Control-Allow-Methods', 'GET, POST');
  res.set('Access-Control-Allow-Headers', 'X-Requested-With, Content-Type');
  next();
});
console.log("Server started.\nAvailable on localhost:" + port);
app.get('/hello', function(req, res){
  res.send("Hi!");
});
```

### Heroku origins

Heroku is not the spring chicken you might think it is - it's been ticking along, in one form or another, since 2007! One of the first 'cloud platforms', originally, Heroku was designed as a platform for quickly deploying Ruby projects that people wanted to share. Back in 2007 (and some might argue that little has changed since) Ruby projects were notoriously hard to move from development to production. Heroku was designed to be a one-stop-shop for getting your latest and greatest Ruby-based works out into the world. As time moved on, so too did developer's language preferences. Over the years Heroku made performance tweaks and added in the ability to deploy projects using almost any technology you can think of.



Focused devs happen on Heroku

[SIGN UP FOR FREE](#)

[Learn more](#)



Special offer for readers in **North America**



# 4 issues FREE

When you subscribe\*

**FREE**  
resource  
downloads  
in every  
issue

“ The only magazine  
you need to design  
and develop stunning  
websites ”



Order hotline **+44 (0)1795 592862**

Online at **www.imaginesubs.co.uk/wed**

**\*Terms and conditions** This is a US subscription offer. You will actually be charged £80 sterling for an annual subscription. This is equivalent to \$120 at the time of writing, exchange rate may vary. 4 free issues refers to the USA newsstand price of \$12.99 for 13 issues being \$168.87, compared with \$120 for a subscription. Your subscription starts from the next available issue and will run for 13 issues. This offer expires 31 December 2015.

Quote  
**USA**  
for this  
exclusive  
offer!

# Create API schemas with Swagger

Improve your API skills and generate detailed API schemas with minimal coding and well-crafted documentation





APIs are great - they expose content to clients and developers, and can help manage the state of data across a number of platforms and systems.

However, both the creation and consumption of APIs can be tricky when there is untested code or poor accompanying documentation for your references. Ideally you want your code to pass tests and you want your clients or consumers to know what to send and what to expect back from each response. Providing these crucial details without spending too much time on creating this information is key, and Swagger is here to help you do just that.

In this tutorial we will take a look at Swagger and how we can build an API and its underlying definitions and documentation using common Node.js frameworks.

We will start off by installing the required Node modules and libraries to get up and running, look at some of the available features of Swagger to generate skeleton applications and sample code to use as a reference, and finally we will learn how to run local iterations of your API with and without writing any underlying server-side code.

Using the highly readable YAML markup structure and the flexibility provided by the Swagger library and Node implementation, you will be writing and releasing well-documented, well-structured APIs in no time at all.

## 1. Install Swagger

To begin with, you will need to install the Swagger module. Open up your terminal or command prompt window and enter the following command. The additional flag will install Swagger as a globally available module so that it is accessible from any directory on your machine.

```
npm install -g swagger
```

## 2. Project creation

Within the CLI navigate to the desired location of your project. Run the Swagger 'create' command, providing the name of your new project. The module will display options for you to choose your desired Node REST framework to work with. We're selecting Hapi.js but feel free to choose your own.

```
swagger project create my_music_app
```

## 3. Run the API

With the project created, let's see what the skeleton application has built for you. Run the command to start your Swagger project, which will run the underlying Node server on a local port instance. Visit the URL provided in the command-line interface to see the sample REST endpoint in action.

```
swagger project start my_music_app -d
```

## 4. The Swagger editor

In this step we will now run the following command to open the editor and load up the current project. This will run a local server and automatically open up in your default browser to show you the associated Swagger.yaml file and this will form the core of your API definition and documentation.

```
swagger project edit my_music_app
```

## 5. Interactive file updates

You will notice now that the swagger.yaml document is open in the left, and that the parsed readable content is on the right, generated by Swagger. Any changes that are now made to the open file now will be instantly visible in the right as well as automatically saved to the

file in your local code editor. Try changing the title value to test this out.



## 6. Live testing

The generated sample application includes an API endpoint, /hello, which can be accessed directly in the browser if the Swagger API is running. It can also be tested live using the Swagger editor. Click the 'Try this operation' button to use the editor to interact with your API and view returned header and body information.

## 7. Create your own path

Now we will work on the paths, so under the paths declaration, let's now create a new path for /artists. The custom Swagger route controller will map this path to a new artists.js file that we will be creating shortly. We want

# Unit testing

If you want unit tests, then you can always put Swagger to work and make it generate tests by using the information that you have already given it about your schema definitions. Take a look at Step 20 to find out how.

```
→ swagger_app sudo npm install -g swagger
Password:
npm http GET https://registry.npmjs.org/swagger
npm http 200 https://registry.npmjs.org/swagger
npm http GET https://registry.npmjs.org/swagger/-/swagger-0.6.3.tgz
npm http 200 https://registry.npmjs.org/swagger/-/swagger-0.6.3.tgz
npm http GET https://registry.npmjs.org/swagger-tools
npm http GET https://registry.npmjs.org/swagger-test-templates
npm http GET https://registry.npmjs.org/swagger-editor
npm http GET https://registry.npmjs.org/fs-extra
npm http GET https://registry.npmjs.org/debug
npm http GET https://registry.npmjs.org/async
npm http GET https://registry.npmjs.org/commander
npm http GET https://registry.npmjs.org/mocha
npm http GET https://registry.npmjs.org/lodash
npm http GET https://registry.npmjs.org/inquirer
npm http GET https://registry.npmjs.org/connect
npm http GET https://registry.npmjs.org/js-yaml
npm http GET https://registry.npmjs.org/serve-static
npm http GET https://registry.npmjs.org/nodemon
npm http 200 https://registry.npmjs.org/debug
npm http 200 https://registry.npmjs.org/fs-extra
npm http GET https://registry.npmjs.org/fs-extra/-/fs-extra-0.18.4.tgz
npm http 200 https://registry.npmjs.org/commander
npm http 200 https://registry.npmjs.org/async
```



### Left

Install the required Swagger Node module as a global dependency to make it available in whatever directory you choose to work in

### Top left

The project creation wizard will guide you and offer a selection of industry-standard proven API frameworks for you to work with

### Top right

Here we are running the built-in server in debug mode, using the optional flag and calling the default API method directly in the browser

# Developer tutorials

## Create API schemas with Swagger

to manage a GET HTTP request. The `operationId` value here dictates the name of the method in the controller to call for this route.

```
paths:
  /artists:
    x-swagger-router-controller: artists
    get:
      description: Returns an array of artists
      operationId: getArtists
```

### 8. Send parameters

Our route definition will be used to filter a remote API to query for information. As such, we want to send values through to the endpoint and ensure we document these too. Set the `parameters` block and nest a resource called `artistName`, a string which will be expected as a URL query parameter.

```
parameters:
  - name: artistName
    in: query
    description: the name of the artist to search for
    required: true
    type: string
```

### 9. Error response definition

The API will respond with some form of information and we will need Swagger to be able to manage these responses, whether they are good or bad. Create a response element and set the default schema to reference an error response definition for anything other than a 200 status code, which we'll be working on in the next step using the `$ref` syntax.

```
responses:
  default:
    description: Error
    schema:
      $ref: "#/definitions/ErrorResponse"
```

### 10. Successful responses

Add the successful response definition to the block, setting the status code as the success requirement. Any 200 status will be classed as a success and will therefore use the applied schema reference which we'll set here as `getArtistsResponse`.

```
"200":
  description: Success
  schema:
    $ref: "#/definitions/getArtistsResponse"
```

### 11. Response data modelling

In our example we now have the intended structure of the response JSON data from the API - a benefit of calling a remote third-party solution. We can use this structure, to build up our response schema for Swagger validation, documentation and testing purposes.

```
{
  "artists" : [
    "href" : "https://api.spotify.com/v1/search?"
```

```
query=batch+walker&offset=0&limit=20&type=artist",
    "items" : [ {

      "external_urls" : {
        "spotify" : "https://open.spotify.com/artist/7qKoy46vPnmIXKCn6ewBG4"
      },

      "followers" : {
        "href" : null,
        "total" : 23552
      },
      ...
    }
  ]
}
```

### 12. Core response model

Create the success response schema within the definitions section, as we have referenced previously in Step 11. We will now expect an object back with the root property of `artist`, which we will expect to be an object. By building up the nested properties we can set the definitions for our API response.

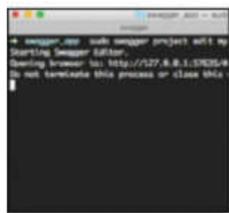
```
getArtistsResponse:
  type: "object"
  properties:
    artists:
      type: "object"
      description: "The core artist response"
      properties:
        total:
          type: "number"
```

### 13. Nested arrays

The official API response will return an array of information within the `artists` block called `items`. Add this

## Automate tasks

You could further optimise your Swagger tasks and unit tests by adding them to a Grunt or Gulp task file. You could then run your tests with every file save to make sure that your tests continuously pass.

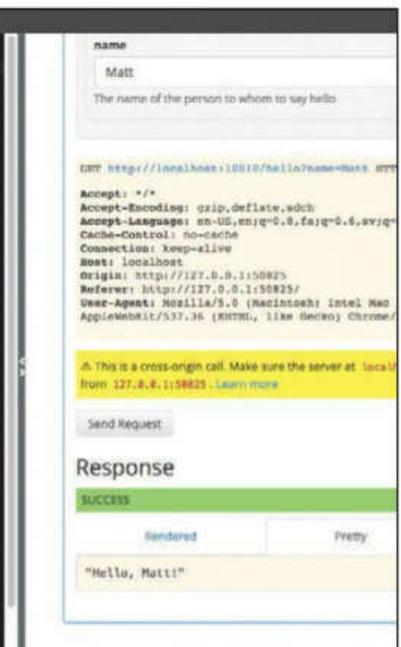
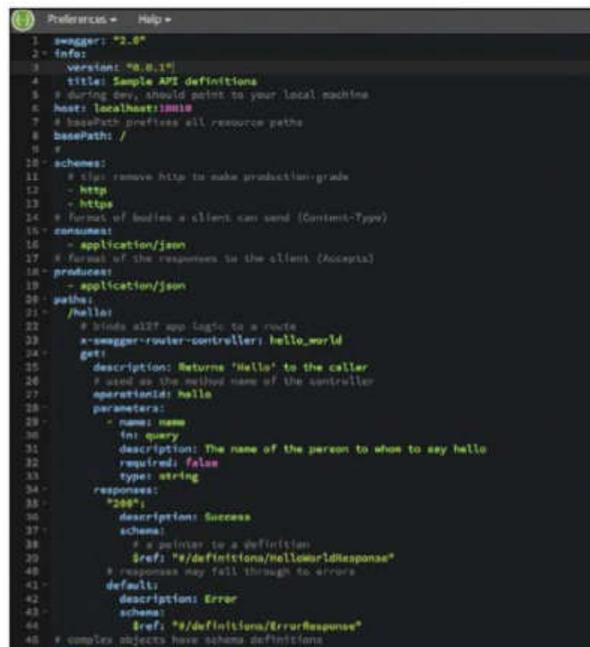


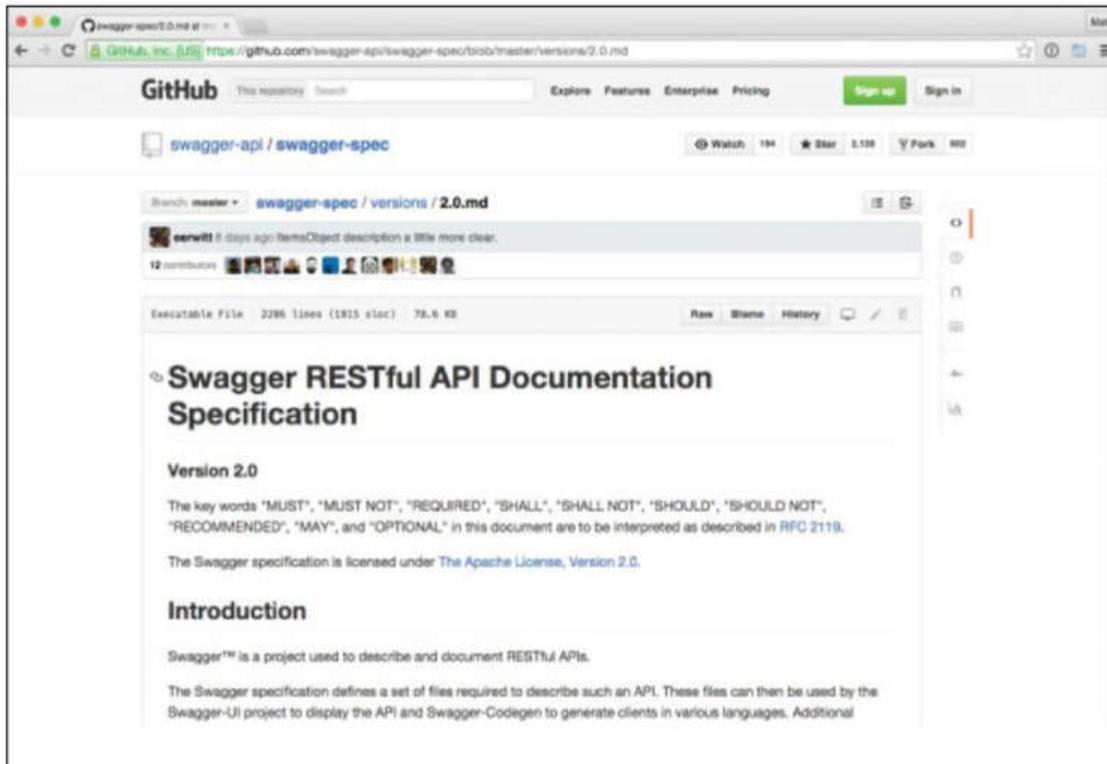
**Top left**  
Open up the Swagger editor on a local private port to edit your YAML file and interact with the API through the available testing interface



**Top right**  
The editor uses a common module to manage the actual code editing and the interface acts and behaves like a standard editor tool complete with code folding

**Right**  
Testing the API default method directly from the Swagger editor gives you information on the headers and body response for quick visual debugging





### Swagger

#### specifications

The `Swagger.yaml` file forms the core of your API definition process and is the key ingredient to Swagger's interpretation of your API requirements. Written in standard YAML markup, it's very easy to read and manage. There are a lot of options and sections or properties for you to use, should your API require them. They may seem a little overwhelming at first glance though, but there is a wealth of options available that can help you to build your perfect API definition.

You can find out all you need to know and all of the available Nodes, properties, types and options that are open to you in the incredibly detailed Swagger specification document, available on GitHub here: [bit.ly/1Lw18nU](http://bit.ly/1Lw18nU).

to the schema by setting the type accordingly. If you declare an array now, Swagger will require you to then set the children for each item, using the second nested items block.

```
items:
  type: "array"
  description: "The array of artists matching the criteria"
  items:
    type: "object"
```

### 14. Continue as required

Now continue to build up the expected response schema for as many properties as you need too. The benefit of writing this in the YAML structure is the ease of readability and maintenance, and that's due to the nested properties. You can add description blocks here to help enhance the generated documentation too for API consumers.

```
properties:
  id:
    type: "string"
    description: "The artist id"
  name:
    type: "string"
    description: "The artist name"
  popularity:
    type: "number"
    description: "The artists popularity"
  uri:
```

```
type: "string"
description: "The artist uri"
```

### 15. Run in mock mode

Creating such a detailed response definition and setting each property type lets you mock a response as you write your Swagger doc. By running the internal server in mock mode, you can obtain a sample response using the provided types without writing any controller logic.

```
swagger project start -m
or
swagger project start mock
```

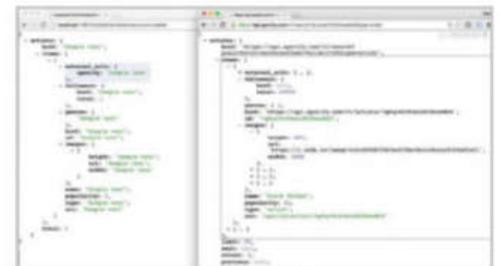
### 16. Compare mock response

With the internal mock server running, hit the artists endpoint in your browser. The mock data will be basic low-level responses but they will match the type specified for each property you created earlier. Compare it to the official API response and confirm your structure is as intended.

### 17. Import the module

Here we'll be using a Node module packaged and ready for use to make our interactions with the third-party Spotify API easier. Install the module and save it as a dependency to your project so it is registered with your `package.json` file.

```
npm install spotify-web-api-node --save
```



### 18. Create your controller

Create a new file called `artists.js` in the `api/controllers` directory of the project. This filename matches the one given for the `x-swagger-router-controller` value earlier. The `operationId` value matches the method exposed in the controller, in our case `getArtists`.

```
'use strict';

var util = require('util');
var SpotifyWebApi = require('spotify-web-api-node');

var spotifyApi = new SpotifyWebApi();
module.exports = {
  getArtists: getArtists
}
```

### 19. Method definition

The `getArtists` method will be called by the API route, and it will need to check for the `artistName` value, sent

# Developer tutorials

## Create API schemas with Swagger

through in the request context as a parameter. We can then send that value to the third-party API and forward the JSON response on to the end user as required.

```
function getArtists(req, res)
{
  var artistName = req.swagger.params.
  artistName.value;
  spotifyApi.searchArtists(artistName)
  .then(function(data)
  {
    console.log('Search artists by "' +
    artistName + '"', data.body);

    res.json(data.body);
  }, function(err) {
    console.error(err);
  });
};
```

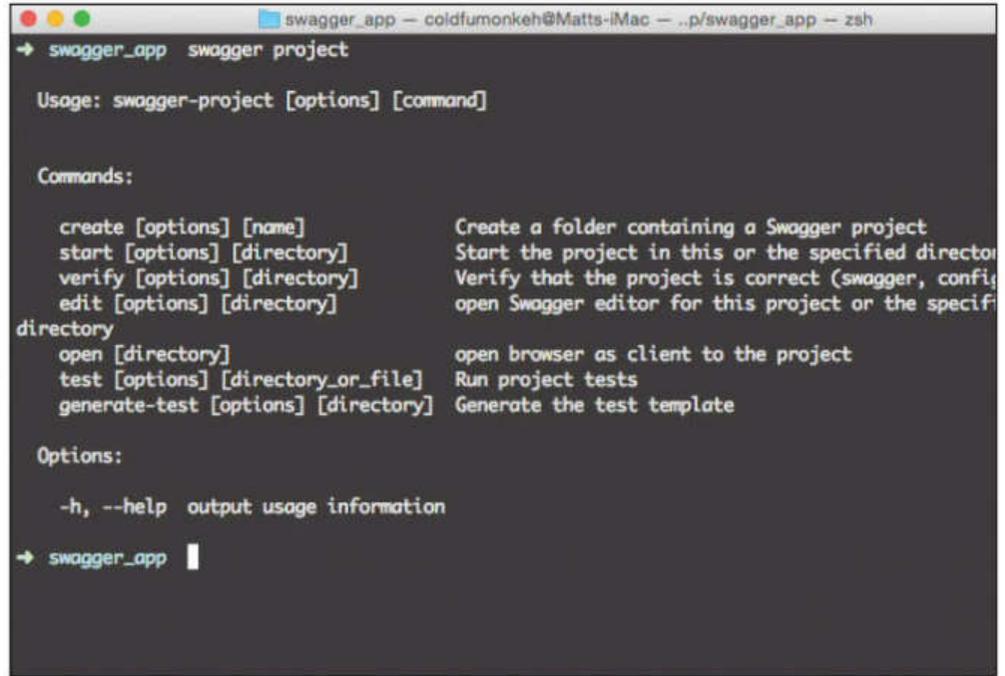
### 20. Generate tests

Use Swagger to assist your code quality and delivery. Running the following command will ask the library to create a test suite for you using the route options and response definitions that you have declared in your Swagger.yaml file.

```
sudo swagger project generate-test
swagger project run-test
```

### 21. Separate modules

Swagger can be used with any programming language or framework. Each toolset, including the editor, the live testing user interface and the core module itself, are available to download separately should you wish to use them. A great resource for tools and community language additions can be found here: [swagger.io/open-source-integrations](http://swagger.io/open-source-integrations).



Above Using the CLI tool, contextual help is always at hand with the inclusion of the optional -h flag with each command



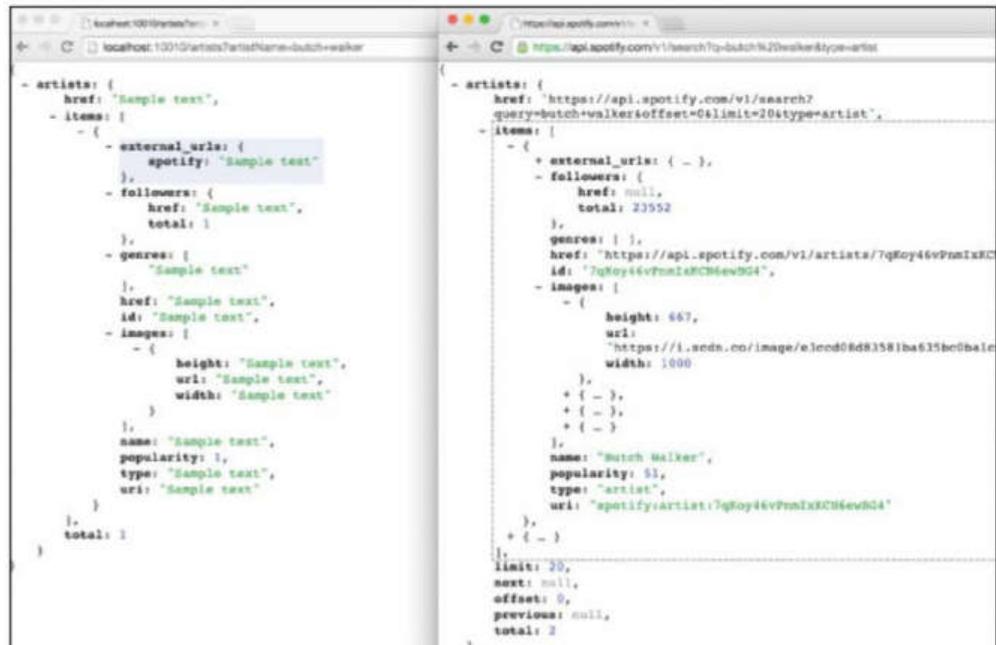
Above The Swagger editor will parse and verify your config file as you work on it and will let you know if you make a mistake



Top left The desired response that we get from the third-party API request will now enable us to fine-tune our internal API response definitions

Top right Add as much information to the response schema as you can. Document every property where possible to improve user adoption

Right Running the server in mock mode helps your definitions improve as you build them without writing any server-side controller code



# IMAGE IS EVERYTHING

www.advancedphotoshop.co.uk



## ADVANCED PHOTOSHOP

Available from all good newsagents and supermarkets

ON SALE NOW

> Paint like a pro > 15 secrets for success > Expert type techniques > Perfect lighting



## BUY YOUR ISSUE TODAY

Print edition available at [www.imagineshop.co.uk](http://www.imagineshop.co.uk)

Digital edition available at [www.greatdigitalmags.com](http://www.greatdigitalmags.com)

Available on the following platforms



[facebook.com/AdvancedPhotoshop](https://www.facebook.com/AdvancedPhotoshop)

[twitter.com/advancedpshop](https://twitter.com/advancedpshop)

To advertise here contact Luke  
 luke.biddiscombe@imagine-publishing.co.uk  
 +44 (0)1202586431

Get your listing **highlighted!** Contact Luke  
 luke.biddiscombe@imagine-publishing.co.uk  
 +44 (0)1202 586431

# Hosting listings

Keep an eye on the latest packages and deals with our comprehensive list of service providers

Got a deal you think we should list?

Whether you're a hosting firm keen to promote your products or a happy customer who wants a favourite provider to be listed, drop us a line with the details!

webdesigner@imagine-publishing.co.uk

NAME AND URL

NAME AND URL	PACKAGE	PHONE NUMBER	COST PER YEAR	WEB SPACE	MONTHLY BANDWIDTH	POP3 ACCOUNTS	DATABASE SUPPORT	SHOPPING CART	VIRUS FILTER	FIREWALL	PHONE SUPPORT	EMAIL SUPPORT	WEB CONTROL PANEL	SERVICE LEVEL AGREEMENT
123-reg (www.123-reg.co.uk)	Starter	0845 859 0018	£29.88	1GB	5GB	20	x	x	x	✓	✓	✓	✓	x
123-reg (www.123-reg.co.uk)	Plus	0845 859 0018	£59.88	5GB	50GB	500	✓	x	x	✓	✓	✓	✓	x
123-reg (www.123-reg.co.uk)	Pro	0845 859 0018	£107.88	10GB	100GB	750	✓	x	x	✓	✓	✓	✓	x
123-reg (www.123-reg.co.uk)	Bus Pro	0845 859 0018	£179.88	20GB	Unlimited	1,000	✓	x	x	✓	✓	✓	✓	x
123-reg (www.123-reg.co.uk)	Plus (MS)	0845 859 0018	£59.88	2GB	25GB	100	✓	x	x	✓	✓	✓	✓	x
123-reg (www.123-reg.co.uk)	Pro (MS)	0845 859 0018	£107.88	5GB	50GB	500	✓	x	x	✓	✓	✓	✓	x
123-reg (www.123-reg.co.uk)	Bus Pro (MS)	0845 859 0018	£179.88	10GB	150GB	1,000	✓	x	x	✓	✓	✓	✓	x
2020Media (www.2020media.com)	Light User	0870 321 2020	£45	20MB	1GB	3	✓	✓	✓	✓	✓	✓	✓	x
2020Media (www.2020media.com)	Everyday	0870 321 2020	£100	200MB	10GB	15	✓	✓	✓	✓	✓	✓	✓	x
2020Media (www.2020media.com)	Business/Pro	0870 321 2020	£275	500MB	20GB	50	✓	✓	✓	✓	✓	✓	✓	x
2020Media (www.2020media.com)	JAVA Tomcat	0870 321 2020	£300	100MB	3GB	15	✓	✓	✓	✓	✓	✓	✓	x
2020Media (www.2020media.com)	ASP.Net	0870 321 2020	£275	100MB	3GB	15	✓	✓	✓	✓	✓	✓	✓	x
4D Hosting (www.4dhosting.com)	Big Web Hosting	0207 183 0602	£60	5GB	Unlimited	20	✓	✓	✓	✓	✓	✓	✓	✓
4D Hosting (www.4dhosting.com)	Bigger Web Hosting	0207 183 0602	£120	10GB	Unlimited	75	✓	✓	✓	✓	✓	✓	✓	✓
4D Hosting (www.4dhosting.com)	Biggest Web Hosting	0207 183 0602	£180	20GB	Unlimited	100	✓	✓	✓	✓	✓	✓	✓	✓
4D Hosting (www.4dhosting.com)	Big VPS	0207 183 0602	£204	75GB	500GB	Unlimited	✓	✓	✓	✓	✓	✓	✓	✓
4D Hosting (www.4dhosting.com)	Bigger VPS	0207 183 0602	£360	100MB	1,000GB	Unlimited	✓	✓	✓	✓	✓	✓	✓	✓
4D Hosting (www.4dhosting.com)	Biggest VPS	0207 183 0602	£720	200GB	1,500GB	Unlimited	✓	✓	✓	✓	✓	✓	✓	✓
Blackfoot Hosting Ltd (www.blackfoot.co.uk)	Home	N/A	£40	500MB	5GB	5	✓	✓	✓	✓	x	✓	✓	x
Blackfoot Hosting Ltd (www.blackfoot.co.uk)	Business	N/A	£50	1GB	20GB	100	✓	✓	✓	✓	✓	✓	✓	x
Blackfoot Hosting Ltd (www.blackfoot.co.uk)	eCommerce	N/A	£100	2GB	40GB	200	✓	✓	✓	✓	x	✓	✓	x
Blackfoot Hosting Ltd (www.blackfoot.co.uk)	Professional	N/A	£150	3GB	60GB	300	✓	✓	✓	✓	x	✓	✓	x
Blacknight (www.blacknight.com)	Minimus	35359 918 3072	£45	10GB	200GB	Unlimited	✓	✓	✓	✓	✓	✓	✓	x
Blacknight (www.blacknight.com)	Medius	35359 918 3072	£79	20GB	400GB	Unlimited	✓	✓	✓	✓	✓	✓	✓	x
Blacknight (www.blacknight.com)	Maximus	35359 918 3072	£45	30GB	600GB	Unlimited	✓	✓	✓	✓	✓	✓	✓	x
Bravo14 (http://bravo14.co.uk)	Starter Linux	N/A	£130	2,000MB	2,000MB	10	✓	✓	✓	✓	x	✓	✓	✓
Bravo14 (http://bravo14.co.uk)	Starter Windows	N/A	£20	2,000MB	2,000MB	10	✓	✓	✓	✓	✓	✓	✓	✓
Bravo14 (http://bravo14.co.uk)	Business Linux	N/A	£45	4,000MB	4,000MB	4,000	✓	✓	✓	✓	x	✓	✓	✓
Bravo14 (http://bravo14.co.uk)	Business Windows	N/A	£45	4,000MB	4,000MB	4,000	✓	✓	✓	✓	x	✓	✓	✓
Bravo14 (http://bravo14.co.uk)	Ultimate Linux	N/A	£60	Unlimited	Unlimited	Unlimited	✓	✓	✓	✓	x	✓	✓	✓
Bravo14 (http://bravo14.co.uk)	Ultimate Windows	N/A	£60	Unlimited	Unlimited	Unlimited	✓	✓	✓	✓	✓	✓	✓	✓
Designwasp (http://designwasp.com)	Starter	0844 372 9848	£30	3GB	20GB	1,000	✓	✓	x	✓	x	✓	✓	x
Designwasp (http://designwasp.com)	Home	0844 372 9848	£40	10GB	50GB	10,000	✓	✓	x	✓	x	✓	✓	x
Designwasp (http://designwasp.com)	Business	0844 372 9848	£60	Unlimited	Unlimited	Unlimited	✓	✓	✓	✓	x	✓	✓	x
Designwasp (http://designwasp.com)	Windows Unlimited	0844 372 9848	£60	Unlimited	Unlimited	Unlimited	✓	✓	x	✓	x	✓	✓	x
Designwasp (http://designwasp.com)	Windows Home	0844 372 9848	£40	10GB	50GB	1,000	✓	✓	x	✓	x	✓	✓	x
Designwasp (http://designwasp.com)	CheapHost	0844 372 9848	£10	300MB	100MB	5	x	x	x	x	x	x	✓	x
Digital Gibbon Ltd (http://digitalgibbon.com)	Personal	01865 589 990	£12	1GB	Unlimited	10	✓	x	x	✓	✓	✓	✓	x
Digital Gibbon Ltd (http://digitalgibbon.com)	Personal Plus	01865 589 990	£48	Unlimited	Unlimited	50	✓	x	x	✓	✓	✓	✓	x
Digital Gibbon Ltd (http://digitalgibbon.com)	Business	01865 589 990	£108	5GB	Unlimited	1000	✓	✓	x	✓	✓	✓	✓	x
Digital Gibbon Ltd (http://digitalgibbon.com)	Business Professional	01865 589 990	£132	Unlimited	Unlimited	Unlimited	✓	✓	✓	✓	✓	✓	✓	x
eHosting (www.ehosting.com)	Starter	0844 999 4100	£23.88	1GB	25GB	10	x	x	x	x	x	✓	✓	✓
eHosting (www.ehosting.com)	Personal	0844 999 4100	£59.88	2.5GB	Unlimited	50	✓	x	x	x	x	✓	✓	✓
eHosting (www.ehosting.com)	Expert	0844 999 4100	£95.88	5GB	Unlimited	250	✓	x	x	x	x	✓	✓	✓
eHosting (www.ehosting.com)	Virtual	0844 999 4100	£227.88	50GB	Unlimited	Unlimited	✓	x	x	x	✓	✓	✓	✓
Evohosting (www.evohosting.co.uk)	Starter	N/A	£29.99	500MB	1GB	3	✓	✓	✓	✓	✓	✓	✓	✓
Evohosting (www.evohosting.co.uk)	Home	N/A	£54.99	2.5GB	30GB	50	✓	✓	✓	✓	x	✓	✓	✓
Evohosting (www.evohosting.co.uk)	Business	N/A	£79.99	6.5GB	Unlimited	Unlimited	✓	✓	✓	✓	x	✓	✓	✓
Evohosting (www.evohosting.co.uk)	eCommerce	N/A	£159.99	30GB	Unlimited	Unlimited	✓	✓	✓	✓	✓	✓	✓	✓
Fasthosts (www.fasthosts.co.uk)	Personal	0808 168 6777	£32.87	5GB	Unlimited	50	✓	x	✓	✓	✓	✓	✓	x
Fasthosts (www.fasthosts.co.uk)	Business Bronze	0808 168 6777	£58.38	50GB	Unlimited	500	✓	Option	✓	✓	✓	✓	✓	x
Fasthosts (www.fasthosts.co.uk)	Business Silver	0808 168 6777	£76.39	Unlimited	Unlimited	Unlimited	✓	Option	✓	✓	x	✓	✓	x
Fasthosts (www.fasthosts.co.uk)	Business Gold	0808 168 6777	£101.89	Unlimited	Unlimited	Unlimited	✓	✓	✓	✓	x	✓	✓	x
Fasthosts (www.fasthosts.co.uk)	WD Starter	0808 168 6777	£149.99	20GB	Unlimited	Unlimited	✓	Option	Option	✓	x	✓	✓	x
Fasthosts (www.fasthosts.co.uk)	WD Advanced	0808 168 6777	£199.99	Unlimited	Unlimited	Unlimited	✓	Option	Option	✓	x	✓	✓	x
Heart Internet (www.heartinternet.co.uk)	Starter Professional	0845 644 7750	£29.80	2.5GB	10GB	1,000	x	x	x	✓	✓	✓	✓	✓
Heart Internet (www.heartinternet.co.uk)	Home Professional	0845 644 7750	£89.99	Unlimited	Unlimited	10,000	✓	✓	x	✓	x	✓	✓	✓

## Featured host of the month: **111WebHost** 111webhost.com

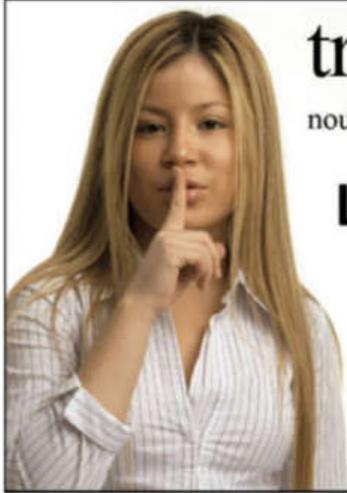


Getting more out of one of our quality listed hosting providers

111WebHost is a provider committed to making website hosting easy to use while offering the best possible value. It provides solutions for small- and medium-sized businesses as well as individuals – and web designers and developers are high on their list. 111WebHost offers a range of top-value packages starting at

the ridiculously low price of £1 per month. For this, users get 1GB of webspace and 1GB of monthly traffic. For those looking for more, there is 5GB of webspace and unlimited traffic for just £2.50 a month. Unlimited webspace and traffic is available for just £5 a month. They also provide specialist hosting for WordPress, Joomla and Drupal.

NAME AND URL	PACKAGE	PHONE NUMBER	COST PER YEAR	WEB SPACE	MONTHLY BANDWIDTH	POP3 ACCOUNTS	DATABASE SUPPORT	SHOPPING CART	VIRUS FILTER	FIREWALL	PHONE SUPPORT	EMAIL SUPPORT	WEB CONTROL PANEL	SERVICE LEVEL AGREEMENT
Heart Internet (www.heartinternet.co.uk)	Business Professional	0845 644 7750	£129.99	Unlimited	Unlimited	Unlimited	✓	✓	✓	✓	✓	✓	✓	✓
Heart Internet (www.heartinternet.co.uk)	Reseller Professional	0845 644 7750	£349.99	Unlimited	Unlimited	Unlimited	✓	✓	✓	✓	✓	✓	✓	✓
ICUK www.icukhosting.co.uk	Professional	0845 009 9175	£30	250MB	1GB	50	✓	✓	option	✓	✓	✓	✓	✓
ICUK www.icukhosting.co.uk	Advanced	0845 009 9175	£50	2GB	2.5GB	150	✓	✓	option	✓	✓	✓	✓	✓
ICUK (www.icukhosting.co.uk)	Enterprise	0845 009 9175	£80	2GB	500MB	Unlimited	✓	✓	option	✓	✓	✓	✓	✓
ICUK (www.icukhosting.co.uk)	Professional Plus	0845 009 9175	£90	500MB	5GB	100	✓	✓	option	✓	✓	✓	✓	✓
ICUK (www.icukhosting.co.uk)	Premium Plus	0845 009 9175	£150	1GB	12.5GB	500	✓	✓	option	✓	✓	✓	✓	✓
ICUK (www.icukhosting.co.uk)	Enterprise Plus	0845 009 9175	£300	2GB	20GB	Unlimited	✓	✓	option	✓	✓	✓	✓	✓
ICUK (www.icukhosting.co.uk)	Reseller Windows	0845 009 9175	£200	Unlimited	Unlimited	Unlimited	✓	✓	option	✓	✓	✓	✓	✓
ICUK (www.icukhosting.co.uk)	Reseller Linux	0845 009 9175	£200	Unlimited	Unlimited	Unlimited	✓	✓	option	✓	✓	✓	✓	✓
ICUK (www.icukhosting.co.uk)	Reseller Enterprise	0845 009 9175	£500	Unlimited	Unlimited	Unlimited	✓	✓	option	✓	✓	✓	✓	✓
JAB Web Hosting (www.jabwebhosting.com)	Mail - M105	0800 043 0153	£15.17	256MB	3GB	50	✓	✓	✓	✓	✓	✓	✓	✓
JAB Web Hosting (www.jabwebhosting.com)	Home - H25	0800 043 0153	£24.47	1GB	8GB	50	✓	✓	✓	✓	✓	✓	✓	✓
JAB Web Hosting (www.jabwebhosting.com)	Professional - P55	0800 043 0153	£45	2GB	15GB	75	✓	✓	✓	✓	✓	✓	✓	✓
JAB Web Hosting (www.jabwebhosting.com)	Reseller - R25	0800 043 0153	£97.88	2GB	30GB	250	✓	✓	✓	✓	✓	✓	✓	✓
JAB Web Hosting (www.jabwebhosting.com)	Reseller - R105	0800 043 0153	£271.60	4GB	Unlimited	Unlimited	✓	✓	✓	✓	✓	✓	✓	✓
LCN (www.lcn.com)	Blog	01438 342 490	£20	100MB	1GB	5	✓	✓	✓	✓	✓	✓	✓	✓
LCN (www.lcn.com)	Starter	01438 342 490	£30	1GB	1GB	10	✓	✓	✓	✓	✓	✓	✓	✓
LCN (www.lcn.com)	Starter	01438 342 490	£30	1GB	1GB	10	✓	✓	✓	✓	✓	✓	✓	✓
LCN (www.lcn.com)	Dynamic	01438 342 490	£50	2GB	2GB	20	✓	✓	✓	✓	✓	✓	✓	✓
LCN (www.lcn.com)	Premium	01438 342 490	£80	5GB	5GB	50	✓	✓	✓	✓	✓	✓	✓	✓
LCN (www.lcn.com)	Unlimited	01438 342 490	£120	Unlimited	Unlimited	Unlimited	✓	✓	✓	✓	✓	✓	✓	✓
LD Hosts (http://ldhosts.co.uk)	LD Budget (Linux)	07891 235858	£11.88	1GB	1GB	500	✓	✓	✓	✓	✓	✓	✓	✓
LD Hosts (http://ldhosts.co.uk)	LD Home (Linux)	07891 235858	£23.88	10GB	10GB	5,000	✓	✓	✓	✓	✓	✓	✓	✓
LD Hosts (http://ldhosts.co.uk)	LD Pro (Linux)	07891 235858	£41.88	50GB	50GB	20,000	✓	✓	✓	✓	✓	✓	✓	✓
LD Hosts (http://ldhosts.co.uk)	LD Unlimited (Linux)	07891 235858	£60	Unlimited	Unlimited	Unlimited	✓	✓	✓	✓	✓	✓	✓	✓
LD Hosts (http://ldhosts.co.uk)	Windows Home	07891 235858	£17.88	2GB	2GB	1,000	✓	✓	✓	✓	✓	✓	✓	✓
LD Hosts (http://ldhosts.co.uk)	Windows Unlimited	07891 235858	£60	Unlimited	Unlimited	Unlimited	✓	✓	✓	✓	✓	✓	✓	✓
Media Temple (http://mediatemple.net)	Shared-Server Pro	+1 310 841 5500	£64	2GB	1TB	1,000	✓	✓	✓	✓	✓	✓	✓	✓
Media Temple (http://mediatemple.net)	Shared-Server Advanced	+1 310 841 5500	£109	5GB	1.5TB	5,000	✓	✓	✓	✓	✓	✓	✓	✓
NameHog (www.namehog.net)	Email Only	01604 212 904	£11.99	2.5GB	15GB	10	✓	✓	✓	✓	✓	✓	✓	✓
NameHog (www.namehog.net)	Starter	01604 212 904	£36.99	10GB	150GB	Unlimited	✓	✓	✓	✓	✓	✓	✓	✓
NameHog (www.namehog.net)	Home Pro	01604 212 904	£59.99	25GB	Unlimited	Unlimited	✓	✓	✓	✓	✓	✓	✓	✓
NameHog (www.namehog.net)	Business	01604 212 904	£109.99	Unlimited	Unlimited	Unlimited	✓	✓	✓	✓	✓	✓	✓	✓
Namesco (www.names.co.uk)	StartUp Plus	0845 363 3632	£89.99	500MB	5GB	10	✓	✓	✓	✓	✓	✓	✓	✓
Namesco (www.names.co.uk)	Business	0845 363 3632	£149.99	2,000MB	20GB	100	✓	✓	✓	✓	✓	✓	✓	✓
Namesco (www.names.co.uk)	Business Plus	0845 363 3632	£89.99	3,000MB	30GB	200	✓	✓	✓	✓	✓	✓	✓	✓
Namesco (www.names.co.uk)	Designer	0845 363 3632	£239.88	1GB	20GB	200	✓	✓	✓	✓	✓	✓	✓	✓
Namesco (www.names.co.uk)	Designer Plus	0845 363 3632	£479.88	Unlimited	30GB	Unlimited	✓	✓	✓	✓	✓	✓	✓	✓
 <b>Netcetera</b> www.netcetera.co.uk	DEVELOPER	0800 808 5450	£32.89	1GB	Unlimited	500	✓	✓	✓	✓	✓	✓	✓	✓
	ONE	0800 808 5450	£109.99	5GB	Unlimited	1000	✓	✓	✓	✓	✓	✓	✓	✓
	RESELLER	0800 808 5450	£274.89	Unlimited	Unlimited	1000	✓	✓	✓	✓	✓	✓	✓	✓
	VM500 Server	0800 808 5450	£300	20GB	Unlimited	Unlimited	✓	✓	✓	✓	✓	✓	✓	✓
	2200DC Server	0800 808 5450	£720	160GB	Unlimited	Unlimited	✓	✓	✓	✓	✓	✓	✓	✓
	3000DC Server	0800 808 5450	£1,200	2x500GB	Unlimited	Unlimited	✓	✓	✓	✓	✓	✓	✓	✓
	2600QC Server	0800 808 5450	£1,800	2x500GB	Unlimited	Unlimited	✓	✓	✓	✓	✓	✓	✓	✓
Netplan (www.netplan.co.uk)	Shared 100	0207 1000 424	£60	100MB	1GB	5	✓	✓	✓	✓	✓	✓	✓	✓
Netplan (www.netplan.co.uk)	VS100	0207 1000 424	£600	5GB	5GB	5	✓	✓	✓	✓	✓	✓	✓	✓
Netplan (www.netplan.co.uk)	VS200	0207 1000 424	£1,000	10GB	10GB	10	✓	✓	✓	✓	✓	✓	✓	✓
Netplan (www.netplan.co.uk)	VS300	0207 1000 424	£2,000	15GB	50GB	20	✓	✓	✓	✓	✓	✓	✓	✓
Netplan (www.netplan.co.uk)	Dedicated Servers	0207 1000 424	£3,000+	73GB+	1,500GB	100+	✓	✓	✓	✓	✓	✓	✓	✓
PurplePaw (www.purplepaw.co.uk)	Email	N/A	£25	100MB	1GB	10	✓	✓	✓	✓	✓	✓	✓	✓
PurplePaw (www.purplepaw.co.uk)	Play	N/A	£40	100MB	1GB	10	✓	✓	✓	✓	✓	✓	✓	✓
PurplePaw (www.purplepaw.co.uk)	Plus	N/A	£65	750MB	5GB	25	✓	✓	✓	✓	✓	✓	✓	✓
PurplePaw (www.purplepaw.co.uk)	Power	N/A	£95	2GB	10GB	100	✓	✓	✓	✓	✓	✓	✓	✓
PurplePaw (www.purplepaw.co.uk)	R3 Reseller	N/A	£660	10GB	50GB	Unlimited	✓	✓	✓	✓	✓	✓	✓	✓



# trade secret

noun {c} ~tred si kriht - A secret formula, method, or device that gives one an advantage over competitors.

## Low cost address lookup for your website

- Buy online from £15 + vat
- Eliminate spelling mistakes
- Reduced abandoned carts
- 80% reduction of keystrokes entering addresses
- Create a professional image for your clients
- Simple integration with SDK & working examples

For more details visit [postcode-software.net](http://postcode-software.net) or call 0845 83 82 666



«klikpic»

Websites for photographers

## Try the **new** Klikpic for only £40 pa includes ecommerce



- Stunning range of new templates.
- New admin system makes it even easier to use.
- Stylish slideshows and carousels throughout.
- New blog styles with extra options.
- Easy upload and link to your social media.
- And much more besides!

Compatible with mobile phones and tablets

Visit [www.klikpic.com](http://www.klikpic.com) for a FREE 14 day trial

POSTGRES DEVELOPMENT ISSUES?

Don't waste time trouble-shooting

If you're developing an application or environment that's not in production, don't waste time if you're faced with an issue. Our Developer Support gives you access to some of the most knowledgeable Postgres experts in the world – you'll be back on track in no time.

Developer Support is available on a monthly subscription. Minimum term is 6 months.

UK +44 (0)870 766 7756  
 US +1 650 378 1218  
[2ndquadrant.com/developersupport](http://2ndquadrant.com/developersupport)

## Domains

.COM just £5.80/pa

## Hosting

From £2.99/pm + FREE Domain

## Cloud

SSD Server from £5/pm

## Servers

Save 50% for 3 months

## Datacentre

Rackspace from £35/pm

0800 808 5450

[netcetera.co.uk/wdm](http://netcetera.co.uk/wdm)

From the makers of **web designer**

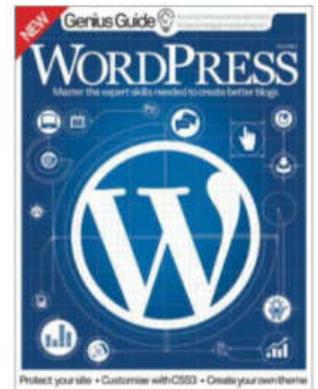
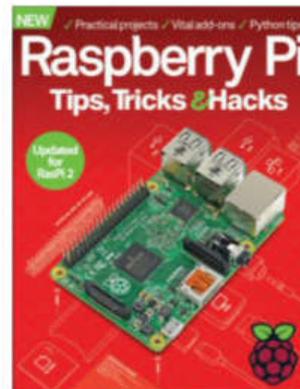
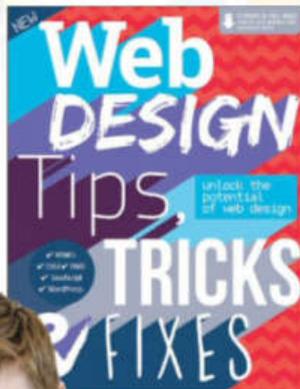
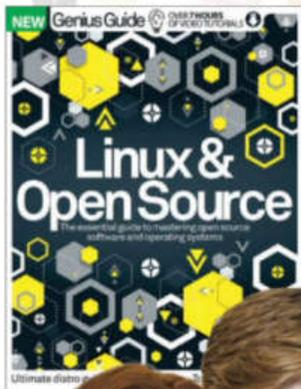
# THE WEB DESIGN BOOK



Perfect coding with the brand-new Web Design Book. Packed with in-depth features and step-by-step guides covering everything from HTML & CSS to designing mobile apps, you'll find everything you need to know to become a master.



Also available...



A world of content at your fingertips

Whether you love gaming, history, animals, photography, Photoshop, sci-fi or anything in between, every magazine and bookazine from Imagine Publishing is packed with expert advice and fascinating facts.



## BUY YOUR COPY TODAY

Print edition available at [www.imeshops.co.uk](http://www.imeshops.co.uk)

Digital edition available at [www.greatdigitalmags.com](http://www.greatdigitalmags.com)



# YOUR FREE RESOURCES

LOG IN TO [WWW.FILESILO.CO.UK/WEBDESIGNER](http://WWW.FILESILO.CO.UK/WEBDESIGNER) AND DOWNLOAD THE LATEST COLLECTION OF MUST-HAVE VIDEOS AND RESOURCES



**PLUS  
72 MINUTES  
OF EXPERT  
JQUERY  
VIDEO**

**30 BLURRED TEXTURES**  
THE PERFECT OPTION FOR BACKGROUNDS



**PRO JQUERY VIDEOS**  
GET STARTED WITH THE BASICS

**TOTAL  
RESOURCES 36**



**TUTORIAL FILES**  
THIS ISSUE'S ASSETS

**YOUR BONUS  
RESOURCES** 

ON OUR BRAND NEW FILESILO THIS ISSUE YOU WILL FIND AN UNMISSABLE COLLECTION OF VIDEO GUIDES AND RESOURCES

- 72 Minutes of expert jQuery video guides from CartoonSmart
- 30 Blurred textures from Louis Richard
- 3 HTML web templates: Judo, Hey Look and Flat Tab Listed Forms templates from W3Layouts
- The Walken Clean and Kingsbridge Extra Bold fonts from Typodermic fonts

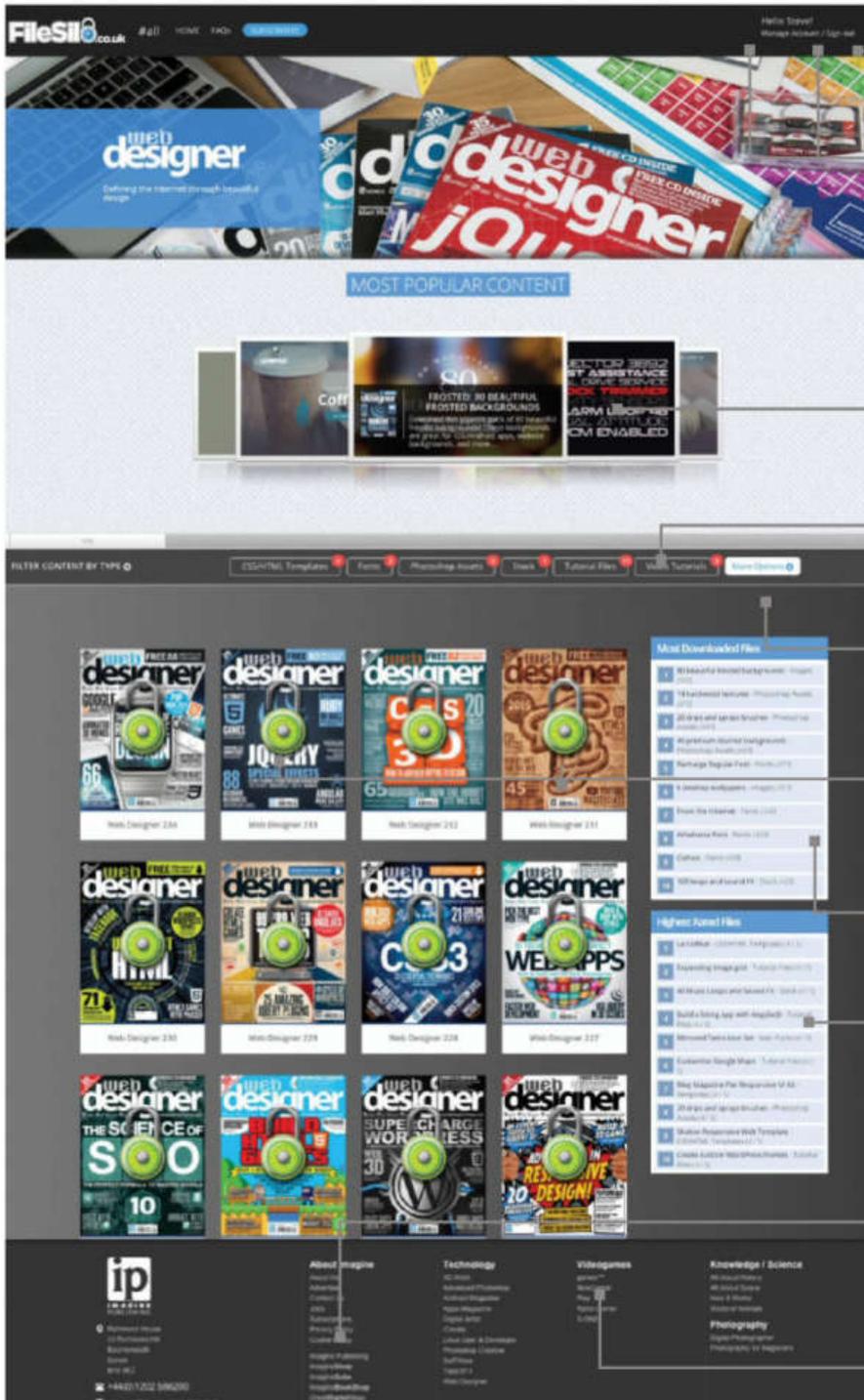


[www.filesilo.co.uk/webdesigner](http://www.filesilo.co.uk/webdesigner)

# FILESILO – THE HOME OF PRO RESOURCES

## DISCOVER YOUR FREE ONLINE ASSETS

- 🔒 A rapidly growing library
- 🔒 Updated continually with cool resources
- 🔒 Lets you keep your downloads organised
- 🔒 Browse and access your content from anywhere
- 🔒 No more torn disc pages to ruin your magazines
- 🔒 No more broken discs
- 🔒 Print subscribers get all the content
- 🔒 Digital magazine owners get all the content too!
- 🔒 Each issue's content is free with your magazine
- 🔒 Secure online access to your free resources



This is the new FileSilo site that replaces your disc. You'll find it by visiting the link on the following page.

The first time you use FileSilo you'll need to register. After that, you can use the email address and password you provided to log in.

The most popular downloads are shown in the carousel here, so check out what your fellow readers are enjoying!

If you're looking for a particular type of content like brushes or fonts, use the filters here to refine your search.

Can't find the resource you're looking for in these filters? Click on More Options to specify exactly what kind of resource you want.

Green open padlocks show the issues you have accessed. Red closed padlocks show the ones you need to buy or unlock.

Top Downloads are listed here, so you can get an instant look at the most popular downloaded content.

Check out the Highest Rated list to see the resources that other readers have voted for as the best!

Find out more about our online stores, and useful FAQs like our cookie and privacy policies and contact details.

Discover our amazing sister magazines and the wealth of content and information that they provide.

# HOW TO USE FileSilo

EVERYTHING YOU NEED TO KNOW ABOUT ACCESSING YOUR NEW DIGITAL REPOSITORY

To get access to FileSilo, please visit [www.filesilo.co.uk/webdesigner](http://www.filesilo.co.uk/webdesigner)

**01** Follow the instructions on-screen to create an account with our secure FileSilo system, or log in and unlock the issue by answering a simple

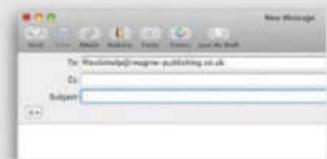


question about the magazine. You can access the content for free with your issue.

**02** If you're a print subscriber, you can easily unlock all the content by entering your unique Subscriber ID. You can find this on all correspondence from Imagine Publishing, including the clear plastic envelopes your magazine gets delivered to your door in every month.

**03** You can access FileSilo on any desktop, tablet or smartphone device using any popular browser (such as Safari, Firefox or Google Chrome). However, we recommend that you use a desktop to download content, as you may not be able to download files to your phone or tablet.

**04** If you have any problems with accessing content on FileSilo, or with the registration process, take a look at the FAQs online or email [filesilohelp@imagine-publishing.co.uk](mailto:filesilohelp@imagine-publishing.co.uk).



**SLIDE-IN MENU**  
**OBSTER**  
Off canvas menu  
Create a slide-in menu...

**CSS SCROLLING BACKGROUND**  
**Hello, we're Elespacio.**  
Create a constant scrolling background  
Use CSS to add animation to backgrounds...

**JQUERY**  
**OVER THE HILLS**  
*the Dead pirates*  
Line animations with jQuery  
Create a Looney Tunes style opener...

## MORE TUTORIALS AND INSPIRATION?

Web Designer is all about giving web designers and developers what they want. Make sure that you pay a visit to the Web Designer website where you will find a treasure trove of design and development tutorials. All the latest technologies and tools are covered including HTML5, CSS3, jQuery, PHP and responsive design. Plus, delve into the lives of the world's biggest agencies with our exclusive interviews. Find out how they design and develop some of the best websites seen on the web.



[www.webdesignermag.co.uk](http://www.webdesignermag.co.uk)

Issue 242 of **web designer** is on sale **12th November 2015** from [GreatDigitalMags.com](http://GreatDigitalMags.com)

# UNLOCK THE POWER OF ANDROID

www.littlegreenrobot.co.uk



## Android magazine

Available from all good newsagents and supermarkets

ON SALE NOW

> Complete guide to Marshmallow > Best way to buy > Build your own game

HARDWARE REVIEWS



ANDROID HACKING



TIPS & TRICKS



APP REVIEWS



HELP & ADVICE



## BUY YOUR ISSUE TODAY

Print edition available at [www.imagineshop.co.uk](http://www.imagineshop.co.uk)

Digital edition available at [www.greatdigitalmags.com](http://www.greatdigitalmags.com)

Available on the following platforms



facebook.com/littlegreenrobot twitter.com/lgrobot

# THE JQUERY ISSUE

Master key jQuery techniques, discover the best 20 contemporary plugins and get nine pages of essential tutorials



## TOP RESPONSIVE IMAGE TIPS

Make images work harder with the latest and greatest techniques



## DRUM WITH THE WEB AUDIO API

All the steps needed to create a drum synth using the HTML5 API



## BUILD WITH ANGULARJS

Discover the techniques you need to start making great web apps



## CODE 3D UI FOR MOBILE DEVICES

Learn how to use device orientation to navigate around tablets & phones

Visit the **WEB DESIGNER** online shop at

**imagineshop.co.uk**

for back issues, books and merchandise

ALL IN YOUR NEXT

**WEB DESIGNER**

Issue 242 on sale

**Thursday 12th November 2015**

# Where ideas take shape.



Bring your projects to life with Shutterstock's diverse library of over 60 million images, videos, and audio tracks. Flexible monthly payment options, innovative search tools, and no daily download limits make creating even easier.

[www.shutterstock.com](http://www.shutterstock.com)

**Buy now and save 20%** on images and video with code: **WEBDESIGNER**

Standard license only. Offer expires 31/12/15.



**shutterstock**



What are you waiting for?



| Telephone: 020 3004 9644 | Email: [info@iwdro.org](mailto:info@iwdro.org) | [www.iwdro.org](http://www.iwdro.org) |