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# 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'll do a self-initiated project to attract the work we want to do**

Talented duo Stevijn van Olst and Johnny Slack talk about getting clever with creativity. Page 32

## How good is your CSS?

**I**t's a simple question, but one that is not so easy to answer. The king of styling is always moving forward, always improving. To keep up, designers and developers need to know the latest tools and techniques.

Our latest lead feature looks to cover all the bases. It includes a comprehensive collection of tools, in fact over 30 tools that will make your CSS the best it has ever been. Keeping them company is a plethora of industry advice, key techniques and must-know tips. If you want the best CSS code you can get then you need to head to page 38 now.

We all know that CSS is a key part of the design process, but adding itself to this list is 3D, or more specifically web 3D. As browser support for WebGL grows and HTML5 gets better so does the opportunity to build more impressive web experiences. If you want to add wow to your website head to page 64. Here you can find out how 3D is influencing design, how it is being used, get expert insight and opinion and find out how to build with three.js. Keeping the big two company is a relative newcomer in the shape of Atom. This is touted as a 21st Century editor and is hackable and customisable to the core. We show you how to get the text editor that you always wanted. Plus, we have our staple selection of CSS, HTML and JS tutorials to keep you busy. Enjoy the issue.

**Well now there's CSSLint, which analyses CSS and helps developers write CSS that conforms to a set of best practices**

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FREE - exclusive with this issue

# 162 Designer resources

- Video Tuition** - jQuery: 54 Minutes of expert video guides from CartoonSmart
- Assets** - 122 Building textures from Go Media
- 25 Vintage light leaks from Feather and Sage
- Fonts** - Black marble from BLKBK & Luvdove from Three Seven Studio



[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...

It's all about creating codebases that are: more flexible, easier to understand, and on the whole better to work with



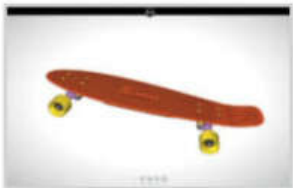
Ralph Saunders

Ralph Saunders is a seasoned front-end developer who works for leading design agency Redweb. He is constantly involved in projects that need to produce the best code possible. This issue he reveals all the tools and techniques needed to create CSS of the highest calibre. **Page 38**

### Shane Mielke



Shane is an award-winning creative director. He has worked on numerous 3D projects including the *Mad Max: Fury Road* site and the *Batmobile Experience*. This issue he imparts his wealth of knowledge on working with web 3D. **Page 64**



### David Boyer



David has over ten years of experience and is a senior developer within NHS Wales using ColdFusion, PHP and Node.js. This issue he looks at the customisable and hackable text editor Atom and shows how to get the version you want. **Page 72**



### Mark Shufflebottom



Mark is a professor of Interaction Design at Sheridan College of Advanced Learning near Toronto. In this issue Mark demonstrates how to build an app that will create custom colour palettes using vibrant.js **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 this issue he reveals how to use Slack and Node.js to automate processes. **Page 84**

### Sean Tracey



Sean is a creative technologist who lives in London. He loves playing with the latest JavaScript APIs. This issue he brings together the *Hover.css* library, CSS animations and *Font Awesome* to enhance the user experience. **Page 52**

### 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**

### Tam Hanna



Tam Hanna started off his career programming in C and C++. Due to that, he can understand the pain caused by duck typing and prototypical inheritance. This issue he reveals how to get better JS with the help of TypeScript. **Page 78**

### Neil Pearce



Neil Pearce is a design course editor for the *Envato* network and an avid web designer with a passion for CSS. In this tutorial, Neil gives you an overview of some of the new CSS4 selectors and what you can do with them. **Page 58**

**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

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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...

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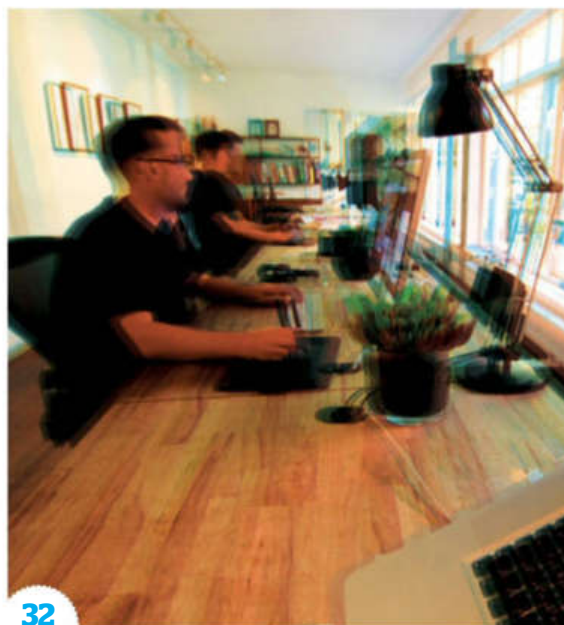
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expert guide to

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add wow to  
your site with

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Add wow to your website with the help of WebGL, HTML5, CSS3 and Three.js

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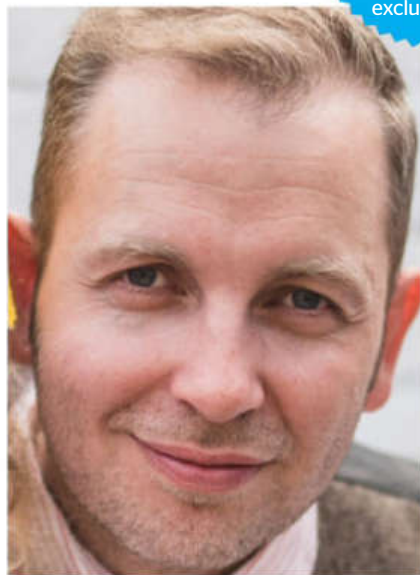
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Paul Jamie Kidd

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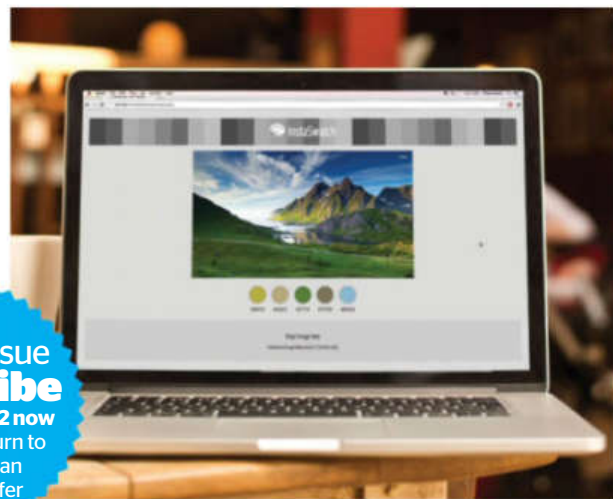
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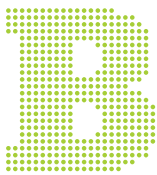
## The tools and trends to inspire your web projects

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# Mozilla Developer Network hits ten

It's been a decade since MDN was formed. We take a look back and reveal what's going to happen in the next ten years



back in 2005, a small group of developers decided it was time to build a free, community-built online resource for web developers. The Mozilla Developer Network was born. And

here we are ten years later celebrating its enduring contribution to learning.

The beauty of MDN is that everyone is welcome to make the web a better place. Contributions are what drive the network and without its community of contributors the network would simply disappear. 2015 sees a lot more web developers in the community than back in 2005 and we know everyone likes to help. Making a contribution is easy. There are two ways you can get started. If you see a page you can make better (by fixing a typo, or adding new information, or fixing technical errors). All you need to do is

click the big blue Edit button at the top of the page. Alternatively, if you have something to offer that doesn't currently exist then start your own page ([mzl.la/1JKqJsi](https://mzl.la/1JKqJsi)). Make sure you check out the MDN content and style guides ([mzl.la/1L2sYDG](https://mzl.la/1L2sYDG)) to get it right.

Keeping a community running is no mean feat and we at **Web Designer** look forward to many more years. To get the low-down on what's happening now and in the future we spoke to MDN manager Ali Spivak, "The Mozilla Developer Network (MDN) is one of the richest, multilingual resources on the web for documentation. It's the go-to platform for learning, to share what you know, and it's a place for the open web community to not only come together, but to create a fruitful environment where we can encourage the growth of web technologies in new fields from where they've been in the past. Our mission is simple: to provide complete, accurate and helpful documentation for

everything about the open web, whether it's supported by Mozilla-built software or not. If it's an open technology exposed to the web, we want to document it.

"MDN as it exists today is quite different from its beginnings. The web has evolved, Mozilla has evolved and MDN has evolved. We can expect even greater changes in the next ten years. We know for sure there will be many more web developers, types of devices and standards that are not yet written.

"Some things won't change: Mozilla's mission will continue to be to work towards an internet that is a global public resource, open and accessible for all. MDN will continue to be a means towards that mission, by providing resources to enable anyone to become a creator of the web. MDN's content, no matter how it's delivered, will be contributed by a global community of people who are passionate about learning and sharing knowledge." Long may it continue.

## Get Web Designer digital editions

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**Web Designer's** latest digital additions to our burgeoning collection are **The Web Apps Handbook** and **10 Amazing Websites and How to Build Them**

**Vol 2**. Get an insight into how to build apps with HTML, CSS and JS as well as with popular libraries including PhoneGap.

Plus, check out **Web Design Superstars** and **225 Best Web Tools and Resources**. How can you get your hands on a Web Designer digital edition? Head to **bit.ly/1hsGYgl** to download the free **Web Designer** app where you can find them waiting for you as an in-app purchase.

“The beauty of MDN is that everyone is welcome to make the web a better place”

## 3 MDN resources you need to know

There are thousands of resources on MDN. Here's three you need to take a look at



### Mozilla Demo Studio

[mzl.la/1DICNXg](https://mzl.la/1DICNXg)

A collection of HTML demos with over 750 contributions on many subjects.



### HTML element reference

[mzl.la/1qTSVwu](https://mzl.la/1qTSVwu)

This page lists all the HTML elements, grouped by function for easy reference.



### CSS reference

[mzl.la/1nFDPYR](https://mzl.la/1nFDPYR)

This is a complete reference of all the standard properties.





# <design notes>

A collection of inspirational visuals

## The National Honesty Index

bit.ly/1fUDLHo

**1** Cute simple line illustrations offer immediate recognition of what they represent. This is combined with simple figures to reinforce the message.

**2** Real life imagery is added to the infographic to give the information a different level. Each image is then accompanied by a caption to add some humour to the piece.



## Colour picker

Hot hexadecimal codes

### The Past

bit.ly/1N237jP



#917F64 #7B664B #61492A #583F20 #382413 #372312

### Feathered tones

bit.ly/1hTmD6K



#DFD5DC #8F778B #EA7F97 #F8B4BC #FBD0D5 #F3E1E2

## Typesetter

The best fonts you need

### ABC ABC

#### Hudson NY

bit.ly/1fUDNz6

Get bold, strong typography, perfect for posters and headlines.

### ABCabc

#### Titular

bit.ly/1ihAnIc

A tall, condensed sans serif typeface that works well with headings.

## Graphics

Great visuals to inspire



### Controller Poster Series

on.be.net/1fUDQLi

A collection of the best ever videogame controllers beautifully re-created using Illustrator and Photoshop. Get one and get it on your wall now.

## Themematic

Style up your WordPress



### Hudson

bit.ly/1Q7SDzs

A contemporary styled and multitalented theme that will fit into any type of site. It includes fullscreen slide options, modern fonts and multiple layouts

## Sites of the month



### Activation Nodeplus activation-nodeplus.com

A site displaying the talents of WebGL and HTML5



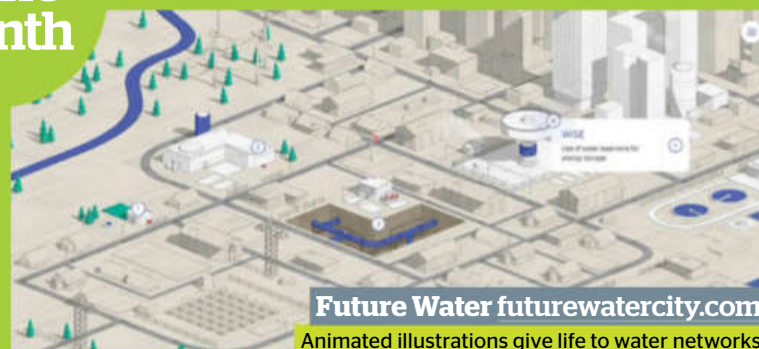
### Wanda Portfo Coralie Castot coralie-castot.fr

Hexagons and animation combine for an inspiring experience



### New from Bose special.bose.eu/en

Angled animated sliders rule here



### Future Water futurewatercity.com

Animated illustrations give life to water networks

# <webkit>

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



## Four

[github.com/allotrop3/four](https://github.com/allotrop3/four)

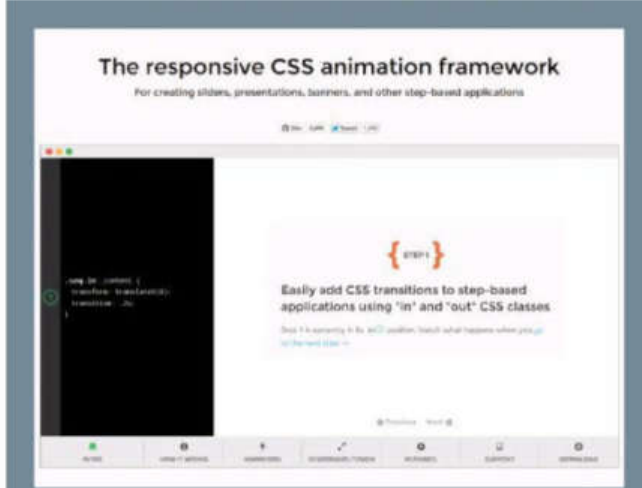
WebGL is not easy to learn. Four avoids the burden of repetition and complexity to speed up and simplify development.



## Hack

[github.com/chrissimpkins/Hack](https://github.com/chrissimpkins/Hack)

Source code needs to be easy to read and the right font plays a critical part. Hack is a no-frills, no-gimmicks workhorse font for code.



## Sequence.js

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

Animation has become an everyday part of the web experience and sites without transitions, fades or swipes are starting to look outdated and unsophisticated. One issue with web animation is how it works on different screens. This is where Sequence.js steps in. The responsive CSS animation framework's core focus is to create sliders, presentations, banners and other step-based applications. Sequence.js takes care of the functionality so you can concentrate on presenting content. The framework provides CSS animations the way you want, is touch-friendly, fully documented with an easy-to-use API.

## SCSS syntax

[github.com/morishitter/cssfmt](https://github.com/morishitter/cssfmt)



## CSSfmt

[github.com/morishitter/cssfmt](https://github.com/morishitter/cssfmt)

CSSfmt is a tool that automatically formats CSS source code. It can format vanilla CSS, SCSS syntax and nested selectors.



## Typeset.js

[blot.im/typeset](https://blot.im/typeset)

A typographic preprocessor for your HTML which offers soft hyphen insertion, small-caps conversion and more.

# TOP 5 UX prototyping tools

Need to create the perfect user experience? Try these out

## 01

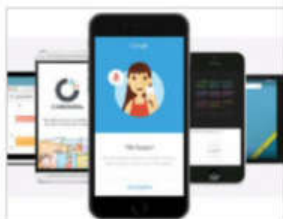


### InVision

[invisionapp.com](https://invisionapp.com)

As a popular and easy to use tool, InVision uploads designs, and adds hotspots to create clickable some useful interactive prototypes.

## 02



### Framer

[framerjs.com](https://framerjs.com)

A well-documented tool that offers a host of features tfor adding effects like animation, states, events, dragging, scrolling and swiping.

## 03



### Origami

[facebook.github.io/origami](https://facebook.github.io/origami)

A free tool for designing modern user interfaces, Origami is an ideal resource for prototyping for iPhone and iPad devices.

## 04



### Composite

[getcomposite.com](https://getcomposite.com)

Composite is an app for creating interactive prototypes. It automatically connects to Photoshop and converts your mockups.

## 05



### POP

[popapp.in](https://popapp.in)

Pen and paper, remember them, they're two tools that still play an important role. Use this app to turn your sketches into working prototypes.



# THE BEST CLOUD FOR YOU

High-speed connectivity, reliability and security are critical for safe, accessible data. But what's best for you? Richard Stevenson of 1&1 tells all



**Over the past decade, the concept of 'cloud' has promised some clear and attractive benefits.**

Such 'promises' are often diluted because the final cloud solution is too

inflexible or lacks power. There are great solutions in both simple clouds and mega clouds, but mid-market clouds are often the most underserved.

When buying cloud servers, consider how solutions match up to every promise - lower TCO, more power, ease of use, more reliability, greater flexibility, increased transparency, no vendor lock-in and long-term support.

First, research the right cloud provider for your needs. Understanding the origin of cloud providers and the role they play in supporting your goals is key to a successful cloud strategy. Cloud providers have typically evolved from three distinct areas: value-added resellers (VARs), ISPs and web hosts. Each type of provider has brought with them vast but widely different experience as they have moved into the 'cloud market'.

Many VARs evolved into a cloud provider by partnering with a hosting infrastructure provider and offering bespoke services. By combining infrastructure and applications they can be attractive for small businesses with a lack of skills in-house. However the higher prices can be a disadvantage.

ISPs can invest in and acquire cloud technology rapidly, but achieving automation and efficiency is very challenging. ISPs can also face challenges delivering ever-changing levels of high-speed connectivity and infrastructure while keeping costs affordable.

This can mean that investing in cloud services is not always the priority and cloud customers could suffer.

A web host's knowledge and skill originate from the shared web hosting market. They invest heavily in infrastructure, and not just for enabling automation, resource management and fast provisioning but also



**RICHARD STEVENSON**

Head of PR at 1&1 Internet Ltd  
1and1.co.uk

considering them central to solutions - meaning a focus on delivering agility, power and price.

When researching individual cloud solutions, it's crucial to understand how the platform has been born. Has it been re-engineered from older legacy systems or has it been redesigned recently to reflect

the best possible technology? Look for a provider that reviews its solution in terms of overall usability - seek a server that delivers the most on cloud promises.

You will also need to understand present and future capabilities. Begin by researching components - what server hardware is used? What type of virtualisation? Is Xen or VMware used? Look for indications from a vendor that a 'premium-partner' strategy has been adopted in order to deliver to you the latest innovations or the best possible results.

Storage can make an enormous difference to performance. Newer cloud solutions will use pure SSD rather than spinning disk, which costs more but is lightning quick as it provides real-time deduplication and compression. A cloud user should experience virtually unlimited disk performance as a result. SSD is also rapidly evolving so is likely to become even better. Look for benchmark studies from third-party sources for this.

Similarly, with elements such as firewalling, load balancing and intrusion protection, look for premium suppliers and whether versions are up to date. Cloud providers investing in the best component parts will be more committed to optimising your cloud journey. Ask how their cloud offering is planned to develop in the future - the best platforms will have a continuous roll-out of new features.

Deployment time, billing transparency and ease of use are also areas that will affect your overall cloud platform success. The ability to leverage multiple machines for short periods and with charges by the minute will enable the scalability promise of the cloud.

As well as fitting your budget, prioritise the providers that show speed, security and levels of guaranteed uptime. Ensure they are investing in strategic partnerships that benefit you in everyday performance and that they use cutting-edge components and networking. Expect innovation in their cloud packages and plans for continual evolution to drive real efficiencies for you in the future.

# NEW WAYS OF LEARNING

Creative director Paul Jamie Kidd ponders how tablet consumption will affect the next generation of designers and developers



ne of the first things I have started to notice with the children around me was how capable they are at using tablet interfaces.

Parents are now beginning to understand the value of

educating via a tablet but it's all about using it in moderation. The tablet can be used as an additional tool in their varied education as opposed to a complete substitute. Nothing comes close to this kind of learning.

I have been fortunate enough to play a very big part in the skills development of my niece and nephew (Lola and Caleb). The first question asked when they come to my house is "where is the I-puter"? This experience heavily influenced my co-creation of the educational apps brand, Ibbleobble.

You can never underestimate how important the tablet is, from helping with core skill development via apps - whether it's learning shapes and colours or how to bake a cake - to the abundance of videos on YouTube. We feel YouTube is vital in acquiring new knowledge; from Caleb learning about noises that fire engines make to singing and remembering the words to *Frère Jacques!*

There are many positives about learning through a tablet. With the extensive choice of applications available to them, children can learn virtually anything. The characters in Ibbleobble each have a different personality and learn in different ways; we celebrate that it's good to be different. One character, Fin the hedgehog, is an intrapersonal learner, which means his strength is to learn things on his own. This is no different with children learning things via a tablet.

Caleb began using the iPad just before he turned three, getting him involved at such a young age I feel can only be a good thing. Children may not understand everything they see on screen but through repetition and familiarity they soon find comfort in what they are interacting with and ultimately learn and develop from it.



**PAUL JAMIE KIDD**  
Creative director at KidDotCo and  
co-creator of Ibbleobble  
kidd.co, ibbbleobble.com

When we first explored the idea of developing our range of apps, it was crazy the amount of negative press smartphones and tablets were getting about how they were bad for children. One article I read spoke about the positives of the tablet in the home suggested parents should see it as a suitable

replacement for the TV, which still receives bad press for the amount of hours children spend on it, in turn making them antisocial and lazy. I believe it's down to the right balance of activities in a child's development. Spending time doing social things such as crafts and sports to go alongside time with their tablet is crucial in helping minds grow. The theory behind our apps encourage active minds as well as active bodies through friendships and being different.

The huge shift from desktop to tablet, suggests the mobile market hasn't reached its potential. You can get an app for almost anything and this leads to the market becoming more and more competitive. I like to think our apps will find a place in the market, based on the rounded brand we have. I could have cobbled something together, but there's much more to Ibbleobble. As for children's apps in general it appears that it isn't as lucrative as you might imagine. Toca Boca, a leading children's app company, has previously posted a profit of £6.1 million compared to Candy Crush maker King Digital Entertainment who made £362 million. There have been murmurs that Apple plans to release the App Store through the Apple TV. This would open up a huge market to explore, especially for game development.

When I was in junior school, there was one computer per classroom, and you were the envy of your friends if you were selected to have a session on it for good behaviour. In contrast some schools now are kitted out with a tablet per child, which may lead to children being more inclined to follow a technical or creative route. Just look at 'Barclays Code Playground', where children are encouraged to learn code, as a fine example of choice on offer. Children hate being bored. So apps with bright colours and distinctive sounds and songs all contribute to their stimulation. Long term, who knows if this will shape their career choice but one thing I would say is that the potential for them is incredible.





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**DIFFERENT  
THINKING**

MORE

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**<Above>**  
 • Instead of a hard sales pitch, the site takes you on an interactive journey following a JOHO's coffee bean



**<Above>**  
 • Parts of the story are arranged into chapters packed with video clips, photography and nuggets of narrative

**<Above>**  
 • Custom cursors enable you to zoom in on assets, switch into new horizontal navigation threads and play videos

**<Above>**  
 • Videos go full width within a custom styled player - neatly providing subtitles for the audio, something seldom seen on web video

**<Above>**  
 • The final slide presents the product in a really subtle way, with links to ordering and indeed a special bonus chapter



# J. Hornig - JOHO's

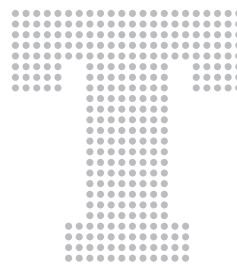
johos.at

**Development technologies** HTML5, CSS3, SVG, Typekit, WebGL, Web Audio API



Designer **WILD**  
wild.as

This immersive web adventure spills the beans on how the popular JOHO's coffee brand journeys from Brazil to your mug



Thanks to the likes of Starbucks, designer coffee has become a boom business with a new generation of discerning drinkers dreaming of percolated perfection. Marketing such product to trendy buyers demands then new forms, spreading a message that ties its experiences to taste. That's precisely the aim here, using progressive web design techniques including HTML5 and WebGL to show how the beans used in JOHO's coffee are sourced.

Emphasising direct trade and a deep respect for ethical local farming, production and manufacture, this site which has been built by Vienna's digital agency WILD, is anything but a

typical venture. An incredible wealth of visual material spanning lush photography and insightful video is arranged chronologically to form an online storybook. The result is a documentary-like journal that transports its visitors from the wild lands of São Silvestre, Brazil to the J.Hornig Headquarters in Graz, Austria. "In March 2014 we went on a journey to Brazil with J. Hornig to find out more about the origins of direct trade coffee," reveals Thomas Lichtblau, who is art director at WILD. "During our trip through Minas Gerais - Brazil's biggest coffee region - we learned a lot about the coffee harvest, processes and the Brazilian people. We built the JOHO's microsite containing interviews with local farmers, beautiful imagery, video and sound elements to make this amazing trip accessible to a broad audience in an immersive way."

abcABC  
1234567890  
abcABC  
1234567890

<Above>  
• Neutraface Text from House Industries styles the main portion of typography with Demi and Bold varieties

abcABC  
1234567890

<Above>  
• Proxima Nova by Mark Simonson Studio completes the typeface styles in Semi Bold form

We learned a lot about the coffee harvest, processes and the Brazilian people

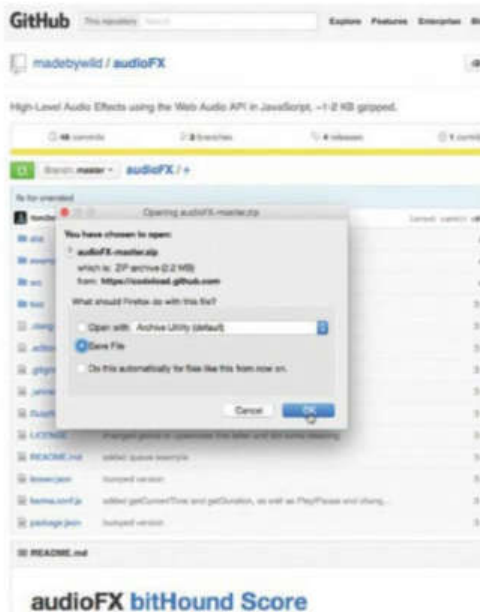


## Use the AudioFX Web Audio API to create distinctive sounds

WILD, the agency behind the JOHO site explains the basics behind the FX plugin for Web Audio API

### 01 Download plugin

Begin by visiting the AudioFX GitHub repository at [github.com/madebywild/audioFX](https://github.com/madebywild/audioFX) and click the Download ZIP button on the right to obtain the latest version. Unzip the audioFX-master.zip file and explore the folder. The file you need is found in the dist subfolder so navigate to it and copy AudioFX.min.js into the root of your new HTML page. You can also find test.mp3 within the 'examples' folder.



### 02 Link the files

To start using the plugin, begin a new HTML page and attach our plugin files by adding the `<script>` reference for the AudioFX.min.js file. Alternatively, you could choose to use the CDN version hosted online by using the second reference shown below. These must go before subsequent code, either in your page `<head>` or before your closing `</body>` tag

```
001 <head>
002 <script src="AudioFX.min.js"></script>
003 <!-- OR ALTERNATIVELY VIA THE CDN -->
004 <script src="http://cdn.jsdelivr.net/audiofx/latest/AudioFX.min.js"></script>
005 </head>
```

### 03 Add the function

Underneath these lines, just before your closing `</head>` tag, we'll create a new AudioFX instance. Here we first pass whichever MP3 file we wish to play, which in this instance is named as test.mp3, and would also be within the root of the page. By calling the second callback function (optional) and the `play()` method, the file will begin playback upon load and only for the duration of the audio. Within this you may also pass an offset start value, by default '0' for the beginning.

```
001 <script>
002 var TestAudio = new AudioFX("test.
003 mp3", function(){
004   this.play(0);});
005 </script>
```

### 04 Play with the settings

Additionally, you can apply various options on instance level including volume (a float between 0 and 1) and a loop toggle (boolean, default false). If you include 'autoplay: true' here as well, the audio will start without requiring the `this.play()` method in the previous step. What we like most, however, is our lowpass filter effect which you can also change using a value between 0 and 1 with the `filterFrequency` option:

```
001var TestAudio = new AudioFX("test.
002 mp3", function(){
003   //do something in here
004 }, {
005   loop: true, //boolean defaults
006   to false
007   volume: 0.85, //float value between
008   0 and 1
009   filterFrequency: 0.5, //float value
```

between 0 and 1

```
007   autoplay: true //
008   boolean defaults to false
009 });
010 </script>
```

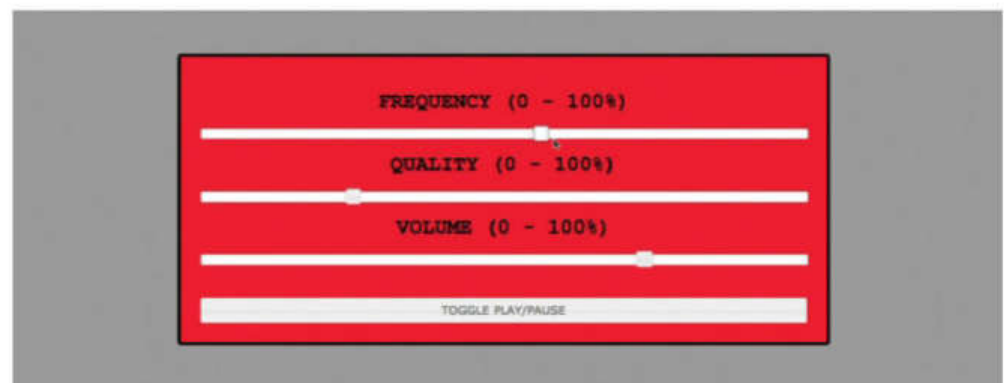
### 05 Play with methods

A series of methods beyond merely `.play()` can be called to stop, pause, toggle, change the volume and more. The `changeFilter()` method accepts frequency and quality numbers (between 0 and 1) to alter the effect of the lowpass filter more acutely. Full documentation for these methods can be found at [github.com/madebywild/audioFX](https://github.com/madebywild/audioFX), but here we'll focus on the filter:

```
001 var TestAudio = new AudioFX("test.
002 mp3", function(){
003   this.changeFilter(0.5, 0.5);
004 }, {
005   loop: true, //boolean defaults
006   to false
007   volume: 0.85, //float value
008   between 0 and 1
009   autoplay: true // boolean defaults
010   to false
011 });
012 </script>
```

### 06 Final preview

Save and preview the page in your browser. The sound should now be playing in a loop and have our lowpass filter applied to it. If you wish to use WAV or OGG files, these will work just as well. An online demo of the plugin can be viewed via [madebywild.github.io/audioFX](https://madebywild.github.io/audioFX) with a version supplied on FileSilo.







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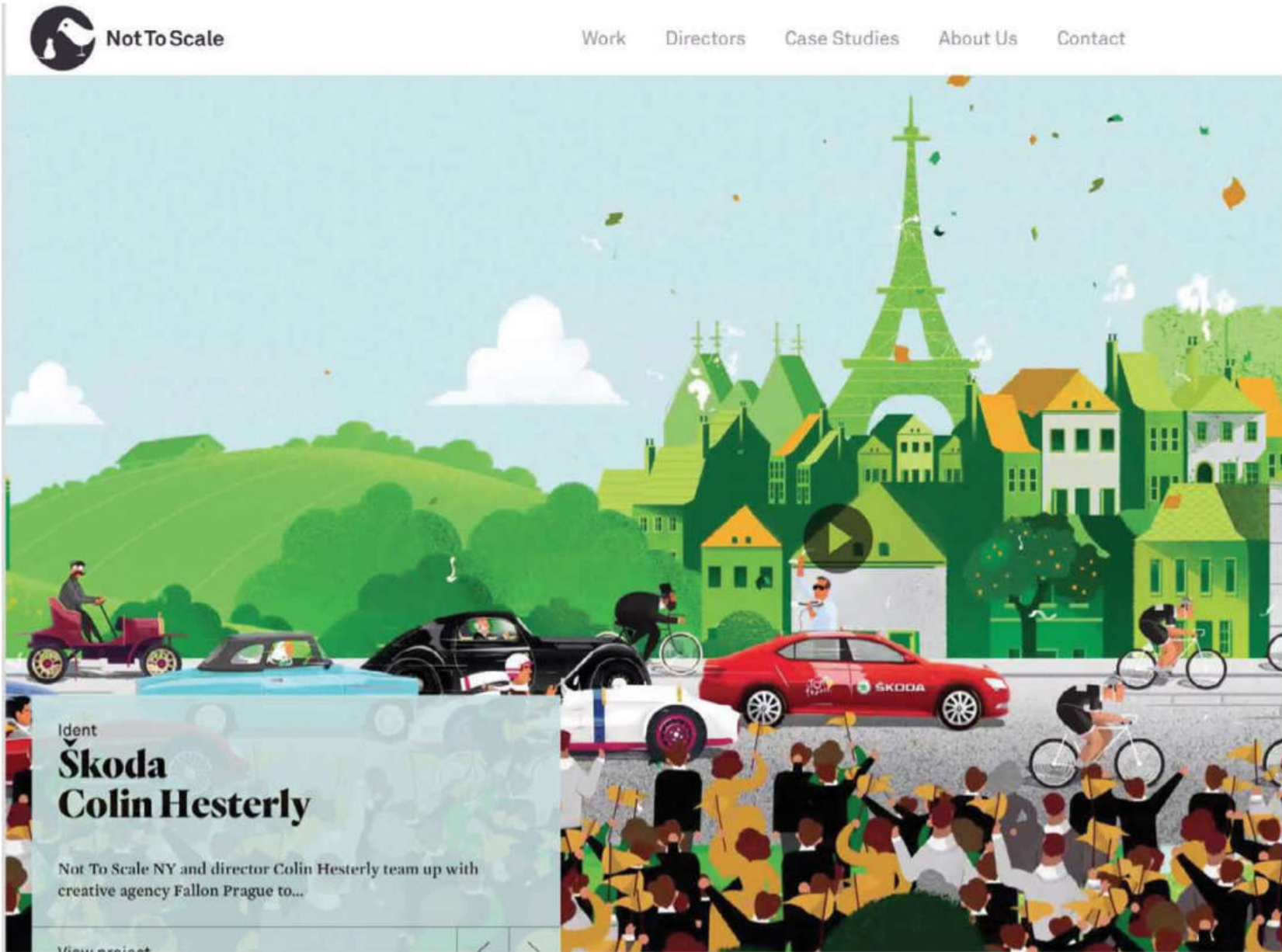
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- Available up to 960GB



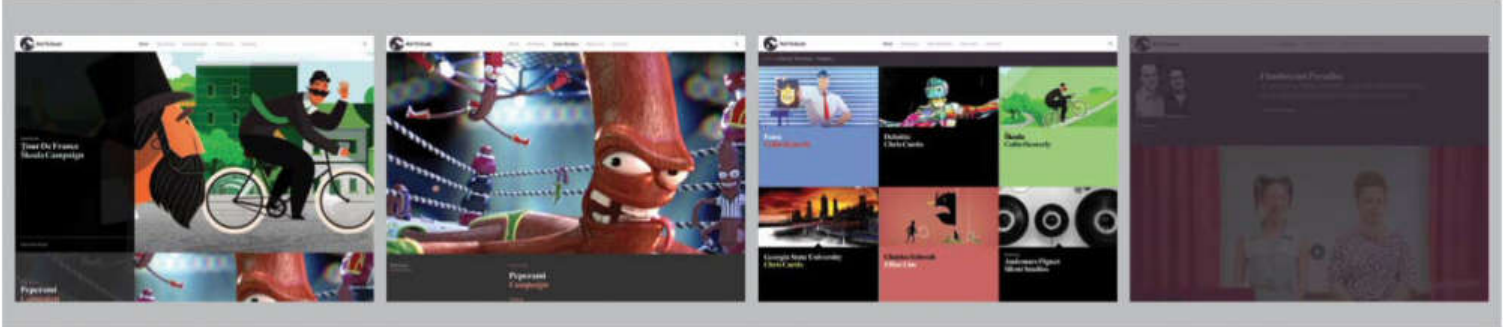
A Toshiba Group Company







**<Above>**  
 • The opening page kicks straight off with a header video, quickly establishing the featured work as the focus



**<Above>**  
 • Parallax scrolling effects give the use of film stills more energy and provide a sense of three-dimensional depth

**<Above>**  
 • Projects are then broken down into Case Studies where more static layouts provide engaging info on the production process

**<Above>**  
 • Content blocks come to life with video on rollover, picking out predominant hues from the stills to apply the CSS hex colours

**<Above>**  
 • The Directors section uses chunky side-panel navigation to keep browsing the wealth of content and intuitive experience

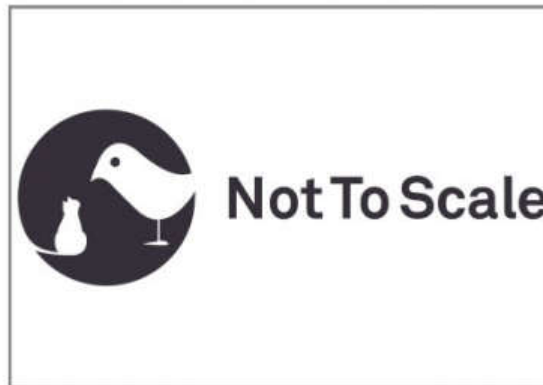




# Not To Scale

nottoscale.tv

**Development technologies** HTML3, CSS3, jQuery, jQuery UI, WordPress

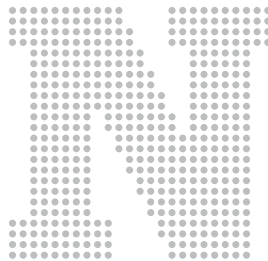


## Designer **She Was Only Not To Scale (featured work assets)**

shewasonly.co.uk

nottoscale.tv

This global animation production company unveils an exquisite portfolio presence full of charm



ot To Scale is an international film and animation content production business with studios in London, New York and Amsterdam. Responsible for award-winning work for some of the world's biggest brands and projects, this official online portfolio is a big, chunky and

bright introduction to a fascinating archive of digital content activity.

Built by independent London agency She Was Only, visitors can experience an incredible array of video exhibits seamlessly woven into a deliberately vibrant and captivating frontend. The eye-popping Work section in particular sets project clips within an expanding array of

tiles, which bubble with preview loops on rollover while bursting with colour.

Although increasingly rare for a sleek contemporary site to be so confident with its palette, **nottoscale.tv** makes this a bold statement by using it as a feature with the designers consciously engineering code for harmonising CSS colours with the featured films. "We really wanted the new website to reflect the broad range of colour and character in Not To Scale's work, so it was important to us that the website felt alive when you are using it," says Craig Scott, partner at She Was Only. "We developed an algorithm that creates colour palettes based on the film stills. As a result of this, each film page inherits the tone of the film. This combined with the video rollovers and subtle animations throughout, we think, really help bring Not To Scale's portfolio to life."

abcABC 123456

<Above>

• Akkurat from **lineto.com** offers a sharp, readable typeface used perfectly across the site's main navigational links

abcABC 123456

<Above>

• Mercury SSm or ScreenSmart is optimised for screen and available via Hoefler & Co used on paragraph text

abcABC 123456

<Above>

• Quarto, again from Hoefler & Co is applied to <span> headings and <h2> tags throughout



<Above>

• The site also features the Socicon font for social icons, available to download free via **socicon.com**

We developed an algorithm that creates colour palettes based on the film stills

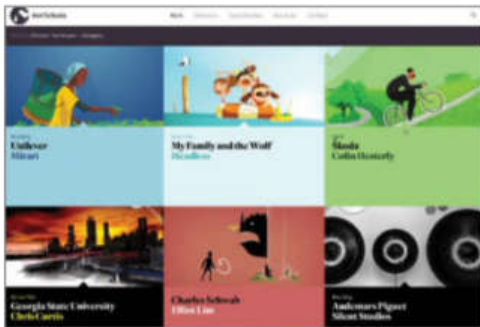


## Pick out CSS colours from a still image with jQuery

Discover the color-thief.js plugin and derive dominant and palette RGB colours from an image element using <canvas> and jQuery

### 01 Capture colours

One of the coolest aspects of the Not To Scale site is how CSS hex colours are taken from video stills to theme UI elements. The designers, She Was Only, developed custom code to perform this in a more sophisticated way, but for this technique we'll do something similar using a clever jQuery plugin called color-thief.js.



### 02 Download color-thief.js

Color-thief.js by Lokesh Dhakar ([lokeshdhakar.com](http://lokeshdhakar.com)) cleverly uses jQuery and HTML5 <canvas> to return RGB values from an image. In this example we will use it to output an <img> element's colour palette across a stack of <div> swatches and RGB labels. The plugin is available from GitHub at [github.com/lokesh/color-thief](https://github.com/lokesh/color-thief) so begin by downloading the ZIP repository.



### 03 Attach jQuery

With the library unzipped, copy the 'src' folder containing color-thief.js into the root of your page. In the <head> attach the latest jQuery, shown below via CDN, and then the plugin script itself:

```
001 <script src="http://code.jquery.com/jquery-1.11.3.min.js"></script>
```

```
002 <script src="src/color-thief.js"></script>
```

### 04 Set up the HTML elements

So our page is very simply made up of a <div> containing our 600 by 450px JPG image, before a series of nested divs we'll change the backgrounds to display the RGB colour values. We'll show a larger dominant colour swatch then eight smaller palette swatches. In each of these swatches we have a <p> label that will also update to output the RGB values:

```
001 HTML:
002 <body>
003 <div class="container">
004 </img>
005 <div class="dominant"><p>COLOR 1</p></div>
006 <div class="palette">
007 <div id="colorBox"><p id="colorLabel">COLOR 2</p></div>
008 <div id="colorBox"><p id="colorLabel">COLOR 3</p></div>
009 <div id="colorBox"><p id="colorLabel">COLOR 4</p></div>
010 <div id="colorBox"><p id="colorLabel">COLOR 5</p></div>
011 <div id="colorBox"><p id="colorLabel">COLOR 6</p></div>
012 <div id="colorBox"><p id="colorLabel">COLOR 7</p></div>
013 <div id="colorBox"><p id="colorLabel">COLOR 8</p></div>
014 <div id="colorBox"><p id="colorLabel">COLOR 9</p></div>
015 </div>
016 </div>
```

### 05 Set the CSS classes

These elements require some styling, purely to arrange them into place, set default colours and so on. Check the project files to see the full markup but the key few for our <div> swatches and labels are listed below as follows. If you view the page thus far the elements will be blank.

```
001 CSS:
002 .dominant {
003 width: 596px;
```

```
004 border: 2px solid #FFF;
005 margin-top: 5px;
006 margin-bottom: 5px;
007
008 #colorBox {
009 float: left;
010 width: 136px;
011 border: 2px solid #FFF;
012 padding: 5px;
013 }
014
015 #colorLabel { color: #000; }
016 .dominant, #colorBox, #colorLabel { background: #FFF; }
```

### 06 Call on ColorThief()

Our main code, placed just before our closing </body> tag, starts by grabbing the myImage <img> element. Next we create a new ColorThief() instance to call the core methods on. The getColor() and getPalette() methods, both passed the image element, return our dominant colour and an array (sized by the second argument -1) of palette colours:

```
001 <script>
002 var myImage = $('#myImage')[0];
003 var colorThief = new ColorThief();
004 var dominantColor = colorThief.getColor(myImage);
005 var paletteColors = colorThief.getPalette(myImage, 9);
```

### 07 Switch the swatches

Now very simply we can update our dominant colour swatch using dominantColor, switching the div element's CSS background-color property and then rewriting its <p> label to display the RGB correctly:

```
001 $(".dominant").css({"background-color": "rgb(" + dominantColor + ")"});
002 $(".dominant p").text("rgb(" + dominantColor + ")");
```

### 08 Populate the palette

To update the palette swatches, the last part of our <script> grabs all the identical boxes and labels into two arrays. The loop then iterates under the length of paletteColors (x8) in order to again change the background-color properties of each swatch, before outputting each RGB value to the labels.





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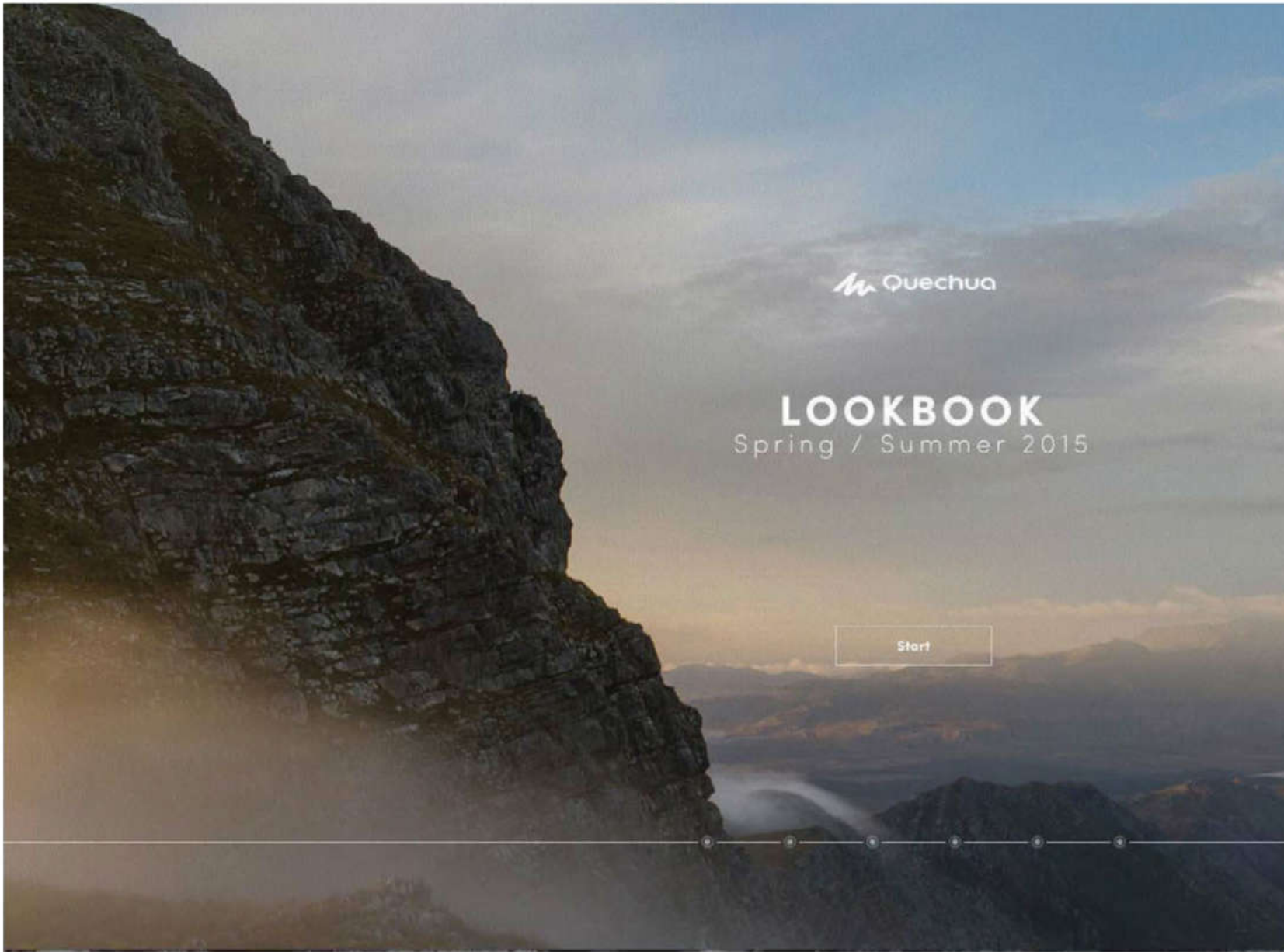
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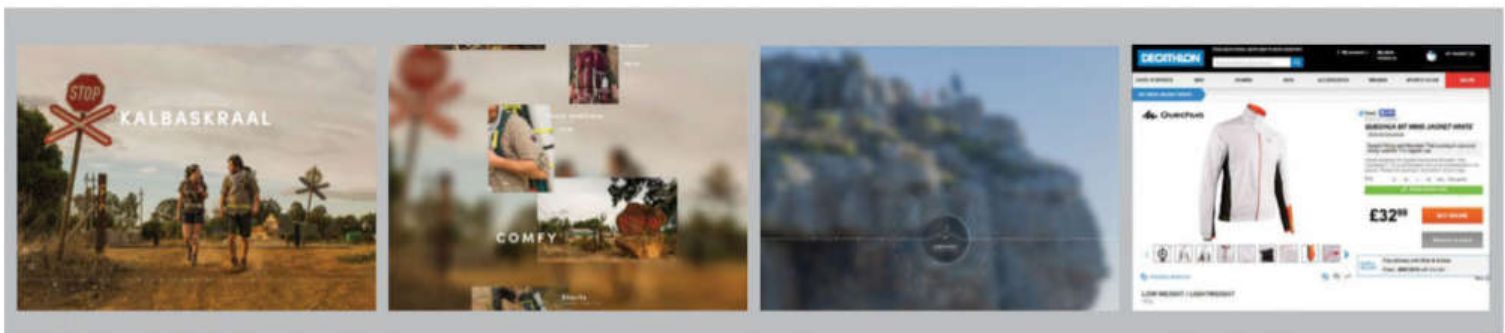
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**<Above>**  
 • The terrain of South Africa serves as a picturesque and almost serene backdrop for Quechua's latest lookbook for the year's Spring/Summer collection



**<Above>**  
 • Sections are set across six locations, putting products into context and making the site feel more like a photo journal

**<Above>**  
 • Elements are fixed to float over a static background, with transforms applied to each image to independently add scrolling effects

**<Above>**  
 • Preloading animations transition into each section, extending the elegant line styles applied to menu and fonts

**<Above>**  
 • Buy buttons link outside the Lookbook microsite to instantly facilitate product purchases via the Decathlon store



# Quencha - Lookbook Spring/Summer 2015

bit.ly/1P04ezS

**Development technologies** HTML5 canvas, CSS3, XML, SVG, JavaScript, JSON



Designer **Akaru**  
akaru.fr

This brochure site blends dizzying scroll effects with great products for an eCommerce adventure



Quencha is a mountaineering brand producing hiking, climbing, camping and adventure sports products, based in Domancy, France - in the shadow of Mont Blanc. Founded in 1997 and christened after an indigenous south American language, the company has since won numerous

Industrie Forum (iF) awards for notable designs. Fitting then that Lookbook Spring/Summer 2015 delights in selling innovative product collections with such designer confidence as the microsite fuses modern web languages with the thrill of exploration.

Built by French digital studio Akaru, the experience focuses on a series of South African

locations, rather than pages, to take visitors on a product journey. Opening with a Start button and six navigational nodes, sections become scroll-driven brochures that place products into context. Catalogue-style still photography is made more engaging and dynamic thanks to ubiquitous scrolling tricks with an effective twist. Out-of-focus backgrounds and floating image frames in fact remain fixed, while the pictures themselves shift independently using translate3D transforms. Switch sections and you'll notice some stylish compass-like preloader animations that work together to extend the line and bullet motif employed by the navigation menu. Overall these relatively simple user interface touches combine wonderfully to form an elegant eCommerce solution that looks and behaves identically on tablets and smartphones.

**The microsite fuses modern web languages with the thrill of exploration**



abcABC

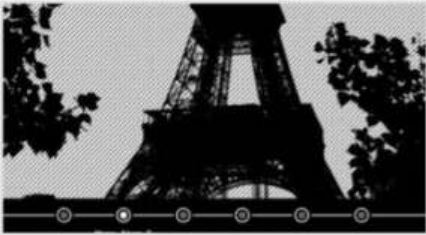
1234567890

**<Above>**  
• Sofia Pro by Mostardesign Studio and available via Typekit is used in Bold weight for product headings

abcABC

1234567890

**<Above>**  
• Sofia Pro in Extra Light variety provides a slender, spindly typeface style for subsequent item tags



## Set up rollover node navigation menus with unordered lists

Emulating the Quechua site, we highlight the use of `<nav>` and `<ul>` tags to structure its node-like navigation menu with pseudo elements to style

### 01 Distinctive menu design

Fans of the Quechua site will notice the neat node-like navigation menu found within the footer of each section. This combines some slick CSS transitions with pseudo-elements to form a line and bullet floating rollover menu. What's more, the menu is formed on the page using HTML5's `<nav>` tag and the `<ul>` unordered list element containing divs and links. To examine this principle, we'll pick apart a simplified version!



### 02 The HTML structure

Using the `<nav>` tag to wrap a navigation element within your page, before using `<ul>` to define a LIST of links, makes semantic sense and observes good practice. To emulate the Quechua dot-line menu in simplified form, your HTML structure might look something like the following. Here we have six node list items, links and labels, separated by five line items:

```
001 <body>
002 <div class="container">
003 <nav id="menu">
004 <ul>
005 <li class="node">
006 <a href="#" class="link">
007 <div class="label">Menu Item
008 </div>
009 </li>
010 <li class="line"></li>
011 ... <!--Abbreviated, see full code-->
012 <li class="node">
013 <a href="#" class="link">
014 <div class="label">Menu Item
015 </div>
016 </li>
017 </ul>
```

```
018 </nav>
019 </div>
020 </body>
021
```

### 03 Contain styles

The first CSS classes are basically concerned with sizing and positioning anything that may contain `<div>` and `<nav>` elements to hold the menu in place. In this instance we want the container full width and towards the page bottom, while the menu part is centred using margin:

```
001 .container {
002 position: absolute;
003 width: 100%;
004 bottom: 0;
005 left: 0;
006 padding-bottom: 100px;
007 overflow: hidden;
008 /*z-index if to sit above other
009 elements*/
010 #menu {
011 position: relative;
012 width: 666px;
013 height: 30px;
014 margin: auto;
015 }
```

### 04 Primary element styles

So now the styling of the actual elements starts with the node items, setting positioning and size. The label elements will actually be made invisible using opacities of zero, which will fade into fully opaque on `node: hover` using a transition. Use the pointer-events property too to prevent the label appearing on hover.

### 05 Lines either side

Both `:before` and `:after` pseudo elements are added to the `#menu` div to create the longer lines either side of the first and last nodes. The first line is then independently positioned using the `left` property to offset the position in front of the menu. We'll also add `node: hover` classes for making dots and labels opaque.

### 06 Link pseudo elements

Again pseudo elements are placed `:before` and `:after` each link, this time to actually form the white rings and dots (greyed by opacity) for each item node.

Border-radius at 50% is used to form the circular rings/dots and the content property uses empty quotes to force content and show the pseudo element:

```
001 .link:before {
002 /* Styles the white rings on each
003 node */
004 position: absolute;
005 content: "";
006 width: 25px;
007 height: 25px;
008 top: 0px;
009 left: 0px;
010 border: 3px solid #FFF;
011 border-radius: 50%;
012 }
013 .link:after {
014 /* Styles the dots within each node
015 */
016 position: absolute;
017 content: "";
018 left: 8px;
019 top: 8px;
020 width: 15px;
021 height: 15px;
022 border-radius: 50%;
023 background-color: #FFF;
024 opacity: 0.4;
025 transition: opacity ease-in 0.3s;
026 }
```

### 07 Customise and extend

For brevity this example is a much reduced imitation of the Quechua design. The site itself adds further transitions and transforms to animate the menu into view and then adds subtle expanding effects. But the basic semantic `<nav>` structure and styling principles apply, so see if you can extend the idea in new and exciting ways!





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PEUGEOT PRESENTS

# CATCH THE DRAGON





# BEHIND THE BUILD WITH DPDK

Dutch digital evangelists team up with Peugeot to create a mind-blowing VR experience



**C**ars and dragons, where's the connection? Inside the minds of the creative thinkers at Rotterdam-based agency dpdk. Still can't see the connection? Catch the Dragon is a promotion for Peugeot's new 208. Still can't see the connection? What brings the concept together is the driver. He sports a dragon tattoo that comes to life. But why does the dragon tattoo come to life? The campaign was based around the idea of a combination of the imagery of the international Peugeot TV commercial - starring an orange dragon - and the footage of the 208 Virtual Testdrive that dpdk had shot previously. The TV commercial was filmed at night in a metropolitan area, whilst the VR footage was shot in broad daylight on a mountain road in the south of France: two very different settings.

Both the commercial and the 208 Virtual Testdrive revolve around driving a new 208 and experiencing its energy. In the commercial, it is *that* energy that translates to a dragon tattoo coming to life and flying out of the car.

How did dpdk hope to achieve this transition? They proposed to blend the Virtual Testdrive and the dragon

Project  
Web

**Catch the Dragon**  
[catchthedragon.nl](http://catchthedragon.nl)

Agency  
Web

**dpdk**  
[dpdk.com](http://dpdk.com)

Total  
hours

**Brief to live: six weeks**

into one interactive VR film in which the user sets out to capture the eponymous creature by using their own energy, looking around and then finally getting friendly with the dragon.

On paper the premise of the project worked, but it was undoubtedly a challenge to begin with. The first thoughts of dpdk's CEO Pim van Helten and creative director Michael Vromans were "How the hell are we gonna pull this off?" But what made them think this? "This project was a part of a bigger picture - the introduction of the new Peugeot 208 on the Dutch market. This introduction consisted of three steps: the initial introduction on the RAI car expo to car enthusiasts, a nationwide broad media introduction and a follow-up activation for consumers who, after experiencing one or both previous outings, were considered by Peugeot as leads interested in buying a new 208."

"Catch the Dragon was the digital campaign of the broad introduction. To reach a wide audience, Peugeot aired the international TV commercial, with the plot revolves around a driver with a dragon tattoo that comes to life once the driver puts his hands on the steering wheel. The orange dragon - as bright as the car

itself - then starts flying around town. Not quite your average car commercial to say the least.

"On top of that, at the time we created the Virtual Testdrive for the RAI car expo, there was neither a storyboard nor footage for this commercial. So the footage we had had no connection whatsoever to an orange dragon. After those first thoughts, we just laid out the different elements that we had to use and started thinking of ways to blend them together into one coherent piece."

Dpdk weren't jumping in at the deep end on the project though luckily, as a previous working relationship between Peugeot and the agency ensured

have to produce a campaign like this in typically six to eight weeks from brief to live), we present the progression every week.

"We start out with a mock-up of how it should look and behave in the end, and then we start building working prototypes. These are the focal points of all communication from that moment on. Through phone calls, emails, Basecamp messages and face-to-face meetings, we discuss technical status, design updates, usability issues and the choices we've made or need to make in the next week.

"Client-side, our team consists of a project executive and several other disciplines including digital, CRM and brand managers. On our side, [we had] a variety of designers responsible for UX, visual and motion design, creative developers, a production team and testers."

Bringing cutting-edge technologies and visual

duties together were never going to be a quick and simple process. In fact there were four different disciplines called into action as van Helten and Vromans reveal: "We had four different disciplines within our team working on the graphical work: design, motion design, creative development and frontend.

"Whilst we start every day with the complete team (adding Interaction design, backend and production to the mix) looking at the complete concept and exchanging opinions on how to shape our idea, these disciplines focused on specific areas within the project.

"Our art director set the style for the logo, the 2D dragon and the campaign website. Our motion designer handled the 3D dragon, the terrain and the transitions between different sections so scenes would lead fluently into one another.

"One of our creative developers had the terrain and dragon come to life by adding textures, shading, lighting and camera settings in code. And frontend was in-

## WE STRIVE TO PUSH THE LIMITS OF WHAT'S POSSIBLE WITHIN MOBILE BROWSERS SO THAT ANYONE CAN IMMEDIATELY TAKE PART

that both companies could trust each other to deliver the perfect project. Van Helten and Vromans explain how they started off working on the Catch the Dragon campaign alongside the car manufacturer and the benefits of Peugeot being a part of dpdk's work:

"Peugeot and dpdk have worked together for over a year, and doing so quite successfully. The previous projects for Peugeot all generated many valuable leads for Peugeot and were award winners at the same time.

We strive to push the limits of what's possible within mobile browsers so that anyone can immediately take part in the campaign.

Peugeot knows this and trusts that we will continue doing so with every project.

"For a successful partnership, trust is essential. From our end, a producer does the day-to-day communication with Peugeot to keep them updated or to ask and answer questions. Because of the short timeframe, (we

# CHASE THE DRAGON

With a buzz around VR technology and 360-degree video, how could dpdk utilise the technologies for a killer concept?

The idea for Catch the Dragon was based on the TV commercial, but van Helten and Vromans wanted the digital experience to be so much more. "We saw the dragon and wanted users to be able to interact with it. Since we had been working with 360-degree video and VR technology before and experienced its impact, we were keen on using [them] in Catch the Dragon. In legends, a dragon has always been this elusive, 'now you see me, now you don't' creature. So the technology and idea were made for each other. The biggest challenge however was to make that hi-res dragon from the commercial fly on mobile browsers. We could have gone with

an app and used the same hi-res images in the commercial, but that would mean users having to download a heavy app. For a campaign, that's deadly - users have to be able to engage instantly.

"We started with sketching a key shot that included the dragon, car, logo and surroundings. We worked on that until it had the exact right look and feel, and from there we knew where we would be working towards in terms of landscape, light and design. As for the dragon, we worked with the original 3D files from the TV version, stripping it back until we had a version simple enough for mobile GPU to render and still look great. A cool detail is that the whole body of the dragon is seamless - repeated and scaled down in code over the whole length of its body."

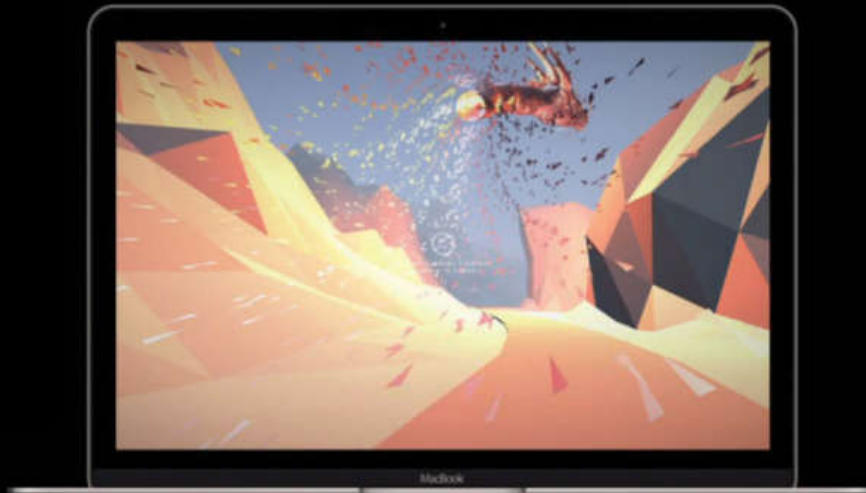




The transition to smartphone meant new sketches and stripped back 3D assets

© 2014 Peugeot





charge of setting the website around the interactive world including all of its' animations. Every discipline played its role.

"A great example is the transition from the introduction movie to the landing page with the intro's last scene ending on the dragon in close-up. Our motion designer edited this to have the dragon 'fall apart' in thousands of low-poly elements. Our creative developer re-created the same low-poly elements, but in CSS. Halfway through the animation, script elements replaced the movie elements so that users could interact with a low-poly cloud. It took a lot of tweaking from both disciplines before it looked like it does now. So it was truly a team effort where everybody challenged as well as motivated one another.

"To get a grip on the total design we had a huge wall filled with inspiration, and as the project progressed with the different scenes and styles, [it functioned] as a storyboard. This way we could all see where style issues would arise in the end product, giving us the possibility to tweak straight away.

"Basically the largest part of Catch the Dragon is the frontend. For the website around the VR movie we wanted a really clean look in design so there was a lot of custom front-end work in creating the forms alone. And because it's responsive of course, there are a lot of exceptions that need to be written along the way. In the end the team really pulled through. There was nothing on our list we didn't do because of time issues."

Bringing the project to life was a challenge in the beginning, but to then bring it to the masses was a different challenge altogether for dpdk. This was because it was no small-scale launch for Catch the Dragon, this was a large-scale launch that had to sync with different kinds of media as well as with devices. Van Helten and Vromans explain how they brought it all together for the medium of television in the end: "The biggest challenge of the whole project was having the digital campaign sync seamlessly with the TV commercial. It was also one of its biggest allies in building broad media presence.

"The TV ad aired and featured a call to action at the end, urging people to visit [catchthedragon.nl](http://catchthedragon.nl). The website launched hours before the first showing on TV, and immediately visitors started coming in. We had also designed multiple other digital media such as mailers and banner sets, generating hundreds of thousands of potential visitors. That's a great advantage of course.

"In the end, the proof of the pudding is in the eating, so if our campaign ended up being dull, slow or simply non-functioning, visitors would have left within seconds

and there would be no leads going to Peugeot. But that wasn't the case. During our campaign, traffic towards the 208 online showroom more than doubled, and online 208 configurations more than tripled. Those are some really successful numbers, even compared to previous campaigns.

"Funnily enough, a considerable amount of traffic came from awards sites such as [awwwards.com](http://awwwards.com). This in turn led to a lot of tweets from within the digital industry, leading to more international web hits."

## THE BIGGEST CHALLENGE OF THE WHOLE PROJECT WAS HAVING THE DIGITAL CAMPAIGN SYNC SEAMLESSLY WITH THE TV COMMERCIAL

# THE CHALLENGE OF 360° VIDEO

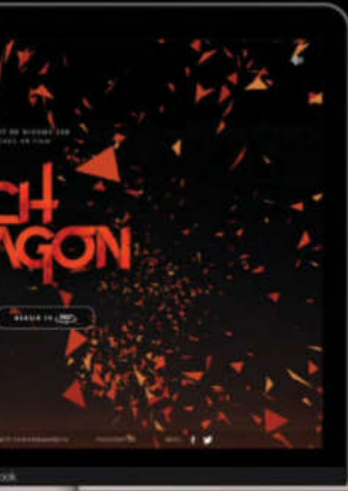
Building the backend is often fraught with issues. It was no different for dpdk, but a clever video solution ensured all devices would enjoy the dragon experience

Mobile browsers weren't playing nicely for the project. Van Helten and Vromans reveal how one of the team's developers came up with a smart solution. "Back-end development was charged with the most important task - saving people's data and safely sending that through to Peugeot. As we had done that multiple times before, this wasn't an issue for our developers. The biggest coding problem was probably the 360-degree video at the start of the experience. Since mobile browsers prompt a native video player, we had no possibility of showing video without users having to press play and close the player afterwards, let alone look around in 360 degrees. In-app we had sorted that out years ago, but online it was a complete different story. As often happens, in the end the challenge was overcome by tricking the system. Instead of going from a video

player with the introduction footage into a WebGL world with the low-poly terrain, our developer came up with the idea of placing a customised 360-degree video player inside a WebGL world. This way browsers see video as code instead of video. When the video ends, it dissolves into the low-poly terrain. That dissolve is hidden in the white flash you see when driving through the mountain tunnel.

"Another big challenge was for the dragon to 'behave' in a natural way. The path it follows, the size and movement of the limbs, flying speed and so on. Since it was one of the project's main features, the focus had been on developing a working dragon from day one, and so we had it working pretty early in the project. But we kept working on it up until the last minute before we went live six weeks later. Seeing it 'fly' around the terrain was worth the effort."





The final piece of the Catch the Dragon project after launch was to ensure that it was kept running smoothly. As Van Helten and Vramons reveal it wasn't all plain sailing and show the virtues of aftercare. "I wouldn't say we actually pass the project on at all. It goes live, and together with the client we see how it comes to life, tweaking where necessary.

"From the moment we went live with Catch the Dragon, we were looking at the analytics to find if people would get stuck or drop out at a certain point. We always do this because it enables us to make changes that better the flow through the site. Of course in campaigns like these we run tests during the stages of development but there's nothing like the real thing. You have hundreds of users from all over the country with an array of devices all making the same decision on every screen - to stay or not.

"In the case of Catch the Dragon, we saw that people had difficulties actually catching the dragon, and thus not reaching the end screen. Talk about a buzz kill... Together with Peugeot we made some changes and soon saw people successfully reach the end. As the campaign progresses, we release the mailers, banner sets and possible updates.

"Peugeot has a great team taking care of campaign results and they will eventually announce the winner. Everybody that catches the dragon is in with a chance to win an exclusive all-in trip to the south of France where the 360-degree footage was shot. We take care of the winner, by arranging all travel details and bookings. From that moment on, we're already thinking about what we will be doing next."

## WHO IS THE FASTEST DRAGON CATCHER?

We ask the team who is the best in the office?



“ I am. I know exactly which numbers to change to make the dragon huge, slow, and utterly inept at avoiding being caught. ”

**SZENIA**  
CREATIVE DEVELOPER

“ Xia, our charlady. She has a great advantage as, just like the dragon, she is Chinese and she obviously has the ninja skills as well. ”

**JORIS**  
MOTION DESIGNER

“ That's a no-brainer! Interaction designer Suzan is the best dragon catcher, 'cause she's such an animal lover. She'll catch this dragon with treats, hugs and kisses! ”

**ANOUK**  
ART DIRECTOR

“ I nominate: me! Together, my afro and code are so suave the dragon comes to me by itself. ”

**MOHAMMED**  
FRONT-END DEVELOPER



A man with glasses and a black shirt is sitting at a long wooden desk in a modern office, working on a laptop. He is looking towards the right. In the background, another person is also working at a desk. The office has a clean, minimalist aesthetic with bookshelves and framed art on the wall.

# INTERACTIVE ARTISANS

With a keen sense of design coupled with technical prowess, craftsmanship is at the heart of Cartelle alongside a continual strive to create digital spaces that transforms brands and the lives of their customers





**F**ounded in 2009 by Johnny Slack and Stevijn van Olst, Cartelle began a partnership that would see the two founders as well as their colleagues develop new interactive experiences for brands from all around the world. Johnny explained how Cartelle became a reality: "We started out when I was working at AKQA Amsterdam tasked to help build the creative development team. Stevijn was a freelance art director and creative helping to get new Nike work.

"We were paired up and I would create rapid flash prototypes to coincide with the decks Stevijn was creating to be pitched to Nike. A lot of really good work got thrown in the trash. We eventually grew tired of the agency process and pace. We figured we could just ditch the whole agency thing and start our own interactive studio. We rented out a small spot that used to be an old toyshop just outside the centre of Amsterdam. After some fresh paint and lettering our street window, we started work as Cartelle."

**who** Cartelle

**what** An Amsterdam-based interactive studio focused on digital design, motion, development and strategy

**where** Elandsstraat 22, 1016 SG, Amsterdam

**web** cartelle.nl

### **Key clients**

Adult Swim

G-Star

adidas

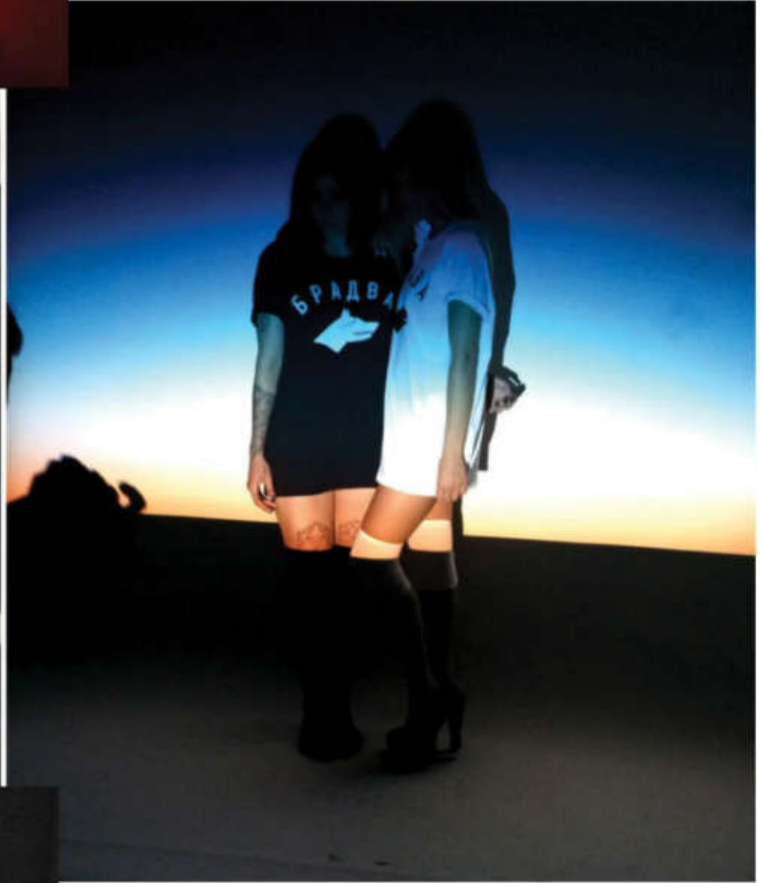
Scotch & Soda

Red Light Radio

Brands come to Cartelle for cutting-edge design and to encapsulate their brand values



As digital artisans, Cartelle are always crafting new digital experiences for their clients



“We’ll do a self-initiated project to attract the work we want to do”

Strong relationships within the core Cartelle team results in original award-winning work



A sense of humour is vital to working with Cartelle



As with all new businesses much debate is often expended on the naming of a new agency. Stevijn outlined how Cartelle's name came to be: "We always had the name Cartelle from when we decided to start our own thing - but not the spelling. When choosing the name we didn't want to be soft, tech-y, silly or corporate. We liked the sound of the word and that it would coincide with some of the work we do for fun, which is often darker, tongue in cheek and may have references to skulls, sex and weaponry.

"Although it's pronounced the same, the spelling change from Cartel to Cartelle was just so it sounded a bit more premium, like a nicely scented perfume. And also so it could stand on its own as a brand name. The domain name was no problem - luckily it was available. We did receive threats from the Cartelle municipality in Spain to change our name, but we just ignored those and things are just fine now!"

Developing a website that will ultimately be your calling card is vitally important to get right. "We put a tremendous amount of effort into our website," Stevijn continued. "Our latest site went up a few months ago and we found it extremely important to not just represent our work with stills. It seems obvious for an interactive shop, but we wanted [our] site to be chock-full of captures so the substance of the work comes across. It's our gallery and our one opportunity to try and wow visitors. We're only two people with no PR arm or anything like that - if our site and work doesn't speak for itself then we're out of business."

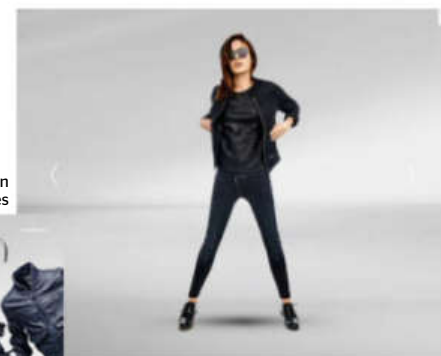
How agencies attract new clients can be manifold. For a small agency like Cartelle, being creative and using their industry contacts has bought them work that has enabled them to showcase their skills. Johnny explains their approach to clientele: "We've been lucky enough to not have to pitch often. That was part of the reason for staying small: so that we don't have to get desperate about the projects we take on. We'll pitch hard if we really want the work - especially if it's a game or entertainment-based. We can often be selective and not give in if the demands are intensive to win a project.

"Having said that, we have had to deal with being part of a pool of other interactive studios (often our friends) bidding and putting in weeks of free work for ad agencies to try and win the same projects. There are always more losers than winners in these scenarios, especially when you're small and are being asked to pitch for free, so we try to avoid this at all costs. It's difficult to give free work to ad agencies that have these insane loft spaces with cabinets made of tortoise shells, ya know?"

All agencies have an understanding of their values and design aspirations. Choosing which clients to work with to achieve those goals can often mean personal work that showcases a skill



Cartelle understands all of the fundamentals involved in communicating brand experiences



A 3D space is used to allow viewers to explore products within the Denim Cloud

## G-Star New Denim Arrivals

[archive.cartelle.nl/denimcloud](http://archive.cartelle.nl/denimcloud)

We developed an immersive 3D 'Denim Cloud' showcasing a selection of trademark G-Star art pieces and denim products that highlight the Raw New Denim Arrivals. Users can discover the full product range by fluidly rotating the cloud in 3D space. Raw New Arrivals is our first exploration into the commercial application of WebGL technology.

We found this project especially important because it launched right at the time where displaying products flat in even grids was (and still is) all the rage. We wanted to inspire a new way of thinking about eCommerce and how online experiences can eventually translate to physical spaces.

The platform bridges the gap between an immersive experience, a clean interface and a solid eCommerce

integration. The quick-buy feature allows the user to purchase items straight from the experience without interrupting the user journey.

We prototyped the experience in After Effects and Cinema 4D in combination with rapid prototypes. This is usually how we start any project like this. We kept the products as 2D sprites, but they always face the camera.

Once we have actually put all the products in different depths, it gives the feeling of a fully 3D experience. We had a long 2D strip of the products as a reference point to ensure that the composition felt balanced. The behaviour and getting the exact position of the products to match the reference in 3D space was just a couple of the challenges that we faced with this G-Star denim project.

that then attracts a client, which is how Cartelle often approaches the business aspect of their agency. "I think as far as who we work with, we have to do this by creating the work first and then hope they will come," says Stevijn. "We have a 'dream client' list. If we want to steer the type of clients we want to work with, we make something - we'll do a self-initiated project to attract the work we want to do. This is why we did the Dilla Dimension and Love Letters From Craig for example. They're passion projects that will hopefully attract more work we're passionate about. It's very competitive, so it's difficult to just reach out sometimes with a portfolio link, even if it has big names in it."

Being a small agency it's important to stay agile and ensure deadlines are met. Johnny outlined Cartelle's working practices: "Projects typically take usually nine to twelve weeks or so. We conceive

everything together. Stevijn is creative director, art director, a Cinema 4D enthusiast and designer. I take care of front-end development and creative programming - JavaScript and WebGL mainly. We both do the interactive concepts together, as well as things like sound design. Tasks like server-side programming, QA and so on. We bring on a close circle of friends to help out. We use Cinema 4D quite a lot - it's fantastic. We use Logic for sound editing. For anyone interested, Sublime is the editor of choice - alongside Tower and Beanstalk. We use Google apps for pretty much everything and preferably AWS for servers."

Evolving their working practices and the tools they use are reactions to how digital content is now consumed. Johnny explained: "[With] HTML5 and CSS3, because of the growing importance of mobile, the evolution of these technologies will probably be heavily motivated by the need for

“Responsive is a nice solution...But the more we do mobile sites, the more different we want to do them from the desktop site”

easier mobile development. Development for mobile is a mess and it may be the responsibility of the W3C to ease the headaches of cross-device mobile development. The evolution of jQuery may also be motivated in the same way. I think for all these technologies it will be about bettering smartphone experiences and development.”

With Johnny also commenting: “Whenever we do a very immersive site they almost always need a separate mobile site because the feeling of the desktop site just doesn’t translate to such a small screen. For grid-based sites that have clear rules then responsive is a nice solution. But the more we do mobile sites, the more different we want to do

As a small agency, individual creativity is always nurtured in the agency



World-class digital experiences are created lovingly at the Cartelle studio



**industry insight**

**Johnny Slack,  
Partner and Creative  
Technology**

“WebGL is what is most exciting to us. We started as a Flash shop and when Stevie decided to crush Flash - that period will go down as the most boring time in web development. When three.js hit, it shook everything back up again”

Cool dudes Johnny and Stevijn in their native Amsterdam





them from the desktop site. I think responsive encourages you to try and squeeze a desktop design into a mobile screen, when often it needs to feel completely different – more like an app.

“WebGL is what is most exciting to us. We started as a Flash shop and when Stevie decided to crush Flash – that period will go down as the most boring time in web development. When three.js hit, it shook everything back up again. There were far less rules and we could create more freely. We first applied it commercially on our G-Star New Denim Arrivals site – a WebGL-powered commerce experience. From then on, we have been doing a lot of WebGL work.”

As Cartelle work with a very close group of friends and colleagues, what advice would they give to anyone who may be looking to work with them? Johnny continued: “We always like when people have work that is self-initiated. Like they just made it up and executed it because they really wanted to – passion projects tell a lot about how involved that person is in their craft. Our advice would be to try and not get marginalised in your company, try to keep evolving and always have your own personal projects.”

The future also looks bright for Cartelle, as they continue to carve their own special niche in the digital space that they have become masters of.

Stevijn concluded: “We are focused on creating interactive entertainment content rather than just websites. We have two games coming out this summer for one of our dream clients, so be on the lookout for those. We also have more collaborations in the works with some of our favourite musicians which we’re really psyched about and hoping they take shape.”

Cartelle prove that smaller agencies can punch well above their weight when the work that is created offers a new perspective to brands and their customers. With a deep understanding of how the digital landscape is evolving, Cartelle are shaping new exciting experiences.



## The Dilla Dimension

dilladimension.com

The Dilla Dimension is a 3D interactive, short film that tells the story of two sugar-coated souls and their psychedelic journey through outer space.

Each step of their voyage is crafted to a selection of tracks from J Dilla’s classic album, *Donuts*. An alternate universe, blanketed with hypercolour sugar and fluorescent glaze, gives birth to an unlikely cluster of doughnut holes.

Suddenly, they are split apart and scattered across a sea of hypnotic, interstellar chaos. But the impossible takes shape when a love is sparked, leading to a desperate search across space for one another.

The project was self-initiated and we wanted to show what can be done if you apply the latest web

technologies to not only hip hop, but also the music industry in general.

It can be seen as a challenge to contemporary music videos and showing musicians and artists what is possible if our industry collides with theirs.

The Dilla Dimension was launched on Dilla Day 2015 to celebrate the ninth year of the album’s release and the life of one of hip hop’s most innovative and influential figures. Dilla Dimension makes great use of a league of new, awe-inspiring technologies to create a completely digital film that’s been made with real-time, generative effects.

It was recognised as Adobe / TheFWA’s Cutting Edge site of the week.



WEB.....cartelle.nl  
 FOUNDERS..... Stevijn van Olst, Johnny Slack  
 YEAR FOUNDED..... 2009  
 LOCATION..... Amsterdam

### SERVICES

- > Games and digital experiences
- > Interactive music videos
- > Campaigns and product launches
- > Mobile sites and applications
- > Interactive concepting

### 2009

Cartelle opens up in a former toyshop in Amsterdam and launches cartelle.nl.

Number of employees  
**00**

(just the 2 founders)

### 2010

Launched a new award-winning platform for Scotch & Soda, our first client.

Number of employees  
**00**

(just the 2 founders)

### 2011

Launched several adidas campaigns eg adidas Then Now and Forever.

Number of employees  
**01**

### 2012

The relaunch of Cartelle.nl features our first explorations into WebGL.

Number of employees  
**01**

### 2013

Launched Converse Street Ready which gets acclaim from Google and FWA.

Number of employees  
**03**

### 2014

G-Star New Denim Arrivals launched and we exceed 20 FWA awards.

Number of employees  
**03**

### 2015

Cartelle advances into net art with projects like Dilla Dimension.

Number of employees  
**03**

### TIMELINE

**YOUR  
BEST  
CSS  
EVER**

THE TOP TOOLS, ESSENTIAL TECHNIQUES AND  
THE BEST ADVICE FOR STYLING PERFECTION



# Analyse your CSS

## ESSENTIAL TOOLS & TECHNIQUES TO GET PERFECT CODE EVERY TIME

**C**SSLinting is just like any other type of linting, in that it is “a tool that flags suspicious usage in software written in any computer language” (from the [Wikipedia page on programmatic linting](#)). Front-end developers are likely aware of JSONLint and JSLint. Well now there’s CSSLint, which analyses CSS and helps developers write CSS that conforms to a set of performance and syntax of best practices.

‘Helps’ is understating it really, CSSLint throws errors and if used as part of a build server – say, TeamCity for example – it will cause builds to fail.

This is both a good and a bad thing. It means the rules are enforced with harsh penalties, but bad rules will create an upsetting development environment.

That’s the rub really – some of the out-of-the-box defaults of CSSLint are controversial, so it pays the project team to take time customising the rule set. Here are some of the ones that draw controversy for many.

### FIVE RULES TO FOLLOW:

#### Don’t use IDs

It’s not that there is anything inherently wrong with IDs, just that the Object Oriented ideology CSSLint was born of rejects them. OO-CSS says all CSS should be reuseable, so the concept of writing an ID into a CSS selector is very foreign. OO-CSS takes the stance that there should be no unique CSS.

For the everyday project team, this is likely an extreme view, and it isn’t relevant if OO-CSS methodology isn’t being employed.

#### Style headings once, globally

What CSSLint is getting at here is when developers write styles for heading elements and then redefine those with

more specificity later in the stylesheet, heading styles should be declared once and not need to change.

Again, this is a bit extreme for the everyday project team. It’s likely that the complexity and number of heading styles that can be seen on any website is defined by the design team.

#### Don’t use too many floats

Lots of floated elements on an individual page cause longer paint times because of the extra layout calculations that browsers have to go through. However, unless you organise your CSS on a per-page basis, this rule is completely arbitrary.

#### Don’t use adjoining classes

This is blacklisted because of browser support. IE6 doesn’t support selectors that look like this:

```
class-one.class-two {
/* ... */
}
```

Turn this rule off if the project offers legacy support towards IE6 users.

#### Better code hygiene

All of these bad defaults make CSSLint look like a bad tool. It really isn’t – there are real advantages to rolling this tool into a project team’s build processes.

CSSLint enforces syntax and code standardisation across the project team on a project-by-project basis. This code hygiene should make it easier to developers working on the project and make the codebase easier to work with as a whole. Accessibility can be enforced with styles like outline:none being outlawed. CSSLint also enforces the bulletproof font-face syntax – the best way to implement @font-face.

## Style secret

CSSLint has a Wiki over at GitHub that details all of the default rule options. Each rule has its own page which goes into depth of what the rule covers and the ideology behind it. Check it out at [github.com/CSSLint/csslint/wiki/Rules](https://github.com/CSSLint/csslint/wiki/Rules).



## To follow

**CSS-Tricks**  
**@Real\_CSS\_Tricks**

The official account for **CSS-Tricks.com**, a web design community curated by CSS legend @chriscoyier.

## 5 top tools

GET YOUR CSS IN TIP-TOP SHAPE

### CSS Beautifier

[html.fwpolice.com/css](http://html.fwpolice.com/css)

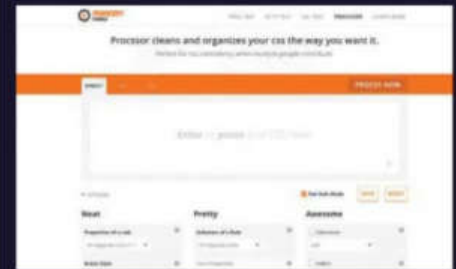
A quick and simple option for creating easy-to-read code.



### ProCSSor

[tools.maxcdn.com/procssor](http://tools.maxcdn.com/procssor)

Helps clean and organise CSS the way you want it.



### W3C CSS Validation service

[jigsaw.w3.org/css-validator](http://jigsaw.w3.org/css-validator)

Built by the community with three options for validating code.



### Format CSS code

[cssportal.com/format-css/index.php](http://cssportal.com/format-css/index.php)

Pick your presets, add code and format to get the code you want and need.

### CSScomb

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

Build your own configuration to get the exact code you want.

“CSSLint enforces syntax and code standardisation across the project team on a project-by-project basis”

# Bring design and build together

CSS PREPROCESSORS DON'T JUST BEEF UP YOUR CSS WORKFLOW, THEY CAN BE USED TO UNITE DESIGN AND BUILD TEAMS!

At this point it's fair to say that CSS preprocessors have captured the imagination of the industry and have become prevalent in production - the most well known being: Sass and SCSS, Less and Stylus. At this point in time there isn't much to tell these preprocessors apart. They all have fairly similar capabilities, just with each going about it a different way and with a slightly differing syntax.

The basic premise of CSS preprocessing is to provide more powerful tooling to developers and also enable more expressive code. This has its pros and cons - the more advanced the tool is, the more skill it will take to use it effectively. In line with this, some of the most basic and easiest to use features of CSS preprocessing are also the most powerful.

These basic features can be used to bring design and build teams closer together, creating codebases that are more flexible, easier to understand and, on the whole, much better to work with.

## Name colours

Design teams are usually in possession of brand guidelines from the client or have created their own by

themselves. In it, the colours are probably named so simply name variables after these colours and maintain them in a file that is specific to the purpose. We do this because it will make it easy to ensure colours are consistent, and this is so that even if the codebase is very large, designers will be able to look at the preprocessor CSS and immediately understand the colour scheme of a component. They'll easily be able to tweak colours of concepts at later stages in the project, which will no longer create headaches for the build team.

**Organise components**  
Split your components into folders. Widgets belong in a widgets folder - same for pods, components (think header, footer and so on) and global modules (grid systems and the like).

## Name font stacks

Most websites have more than one font stack and they're often used in combination with each other, for example headings and body text.

Monitoring the number of different stacks in regular CSS can become a bit of a chore. Find and replace can also be a bit haphazard should two similar, but different, font stacks contain the same font family.

Naming font stacks has similar benefits to naming colours. It enforces consistency and makes recognising incorrect font assignment easier for both designers as well as developers.

## Componentisation

Take advantage of a preprocessor and split the styles up in a logical manner that helps introduce and describe the

## Style secret

With Sass, treat @extend like classes in other languages. It should be immediately clear that a style inherits other rules from somewhere else, so list your @extends first. This also helps with overriding styles later.

codebase. No longer does the 'biography pod' (contains a person's biography) have to sit in the middle of a massive stylesheet.

At a glance, the build team and designers alike should be able to see all the components in the website. This will give everyone a feel for the complexity of the site and should make code reuse and time estimation easier.

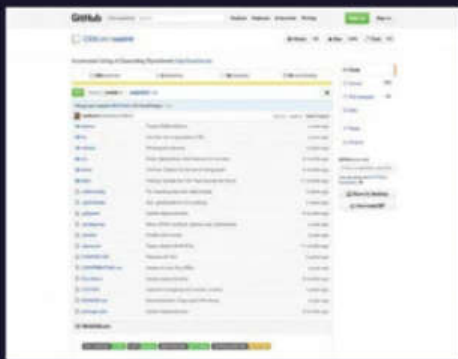
## Flexibility

CSS preprocessors allow you to craft a more flexible codebase. Within a project, changes introduced late shouldn't cause as many headaches for the build team as before. Within a team, resources should be easier to scale with the demands of a sprint or iteration because the separation of concerns is more apparent. Within a company, the front-end discipline should become one that can deliver realistic prototypes with the design team without having a negative impact to the project timeline.

## Points to consider

- Maintaining components in separate files so they are ready to be combined in different ways.
- Sensible use of variables, enabling for changes to be made later on in projects without costing time, for example accessibility issues caused by poor colour contrast can be easily remedied.

## 6 tools WRITE BETTER CSS TODAY



### CSSLint bit.ly/1lfwYPn

CSSLint is a tool to help point out problems with your CSS code.



### analyze-css bit.ly/1MMTh52

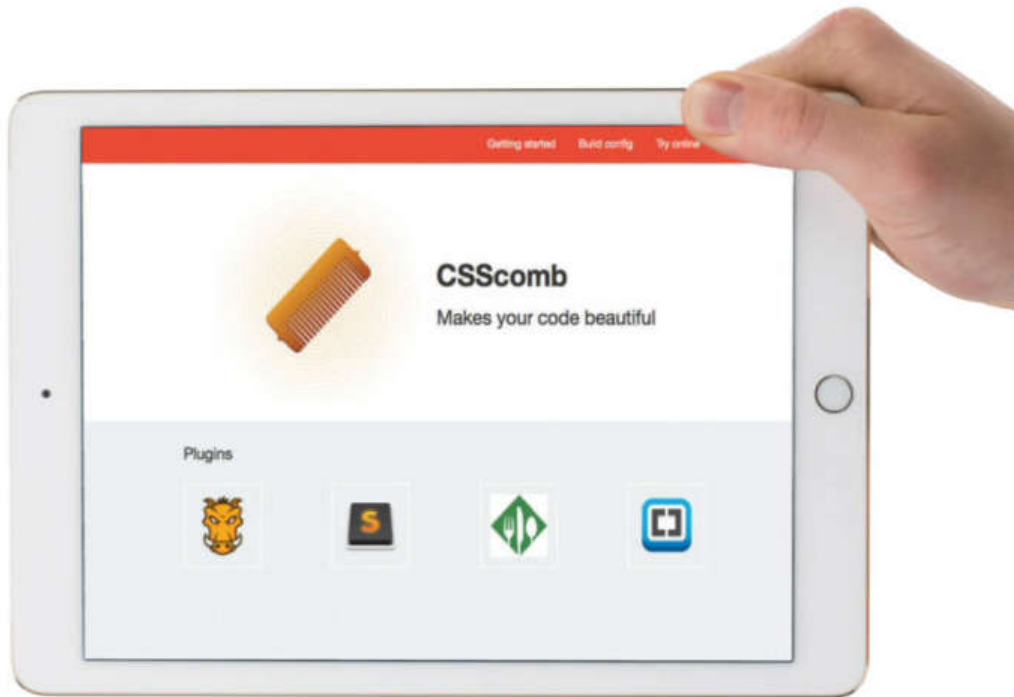
Analyze-css generates reports on selector complexity and performance of stylesheets.



### Sass bit.ly/1nTLuD5

Sass is the most stable and powerful professional-grade CSS extension language in the world.





- The ability to retire code quickly and easily when crafting components. If the client doesn't need a specific component anymore, finding and deleting it is now easy.
- Architecting preprocessor files to allow for variations of the website to be easily generated. This can be easily achieved by importing selected components into new parent preprocessor files.
- Using a preprocessor to quickly make colour scheme/typography changes site-wide, in other words prototyping. No longer does the design team have to slave away producing variations in Photoshop.

## The advance of CSS tooling

Perhaps the single biggest benefit of using one of the big CSS preprocessors is the tools that feed into them. There is a vast range of workflow tooling that can be used to analyse performance, automate tedious tasks and hint at code improvement - among other things.

It must be said that the most valuable of these aren't the 'run once then throw away the results' type, but instead tools that run on 'build'. A build team that has a build server, which creates release builds automatically, could benefit from having a performance report generated for example.

## To follow

  
**CSS Author**  
**@cssauthor**  
A web design and development blog that tweets the best resources and tools for designers and developers

# Beware of bad code

## WHAT TO AVOID AND WHY

### Excessive nesting

CSS preprocessors make it very easy to write long selectors by enabling nested code. Long selectors come at a performance cost, so consider that when nesting code.

### Vendor prefixing

Most preprocessors have options or third-party middleware that will add vendor prefixes automatically. Double-check the output of this behaviour - old prefixes for tools like Flexbox can cause weird behaviours.

### Length of output

When dealing with many small files it's easy for a build team to create a rapidly growing 'main' stylesheet. Look at the output regularly and minify as part of a build process.

### Build errors

Developers not previously exposed to preprocessors may be horrified to find that writing erroneous syntax now results in build errors. But this is still better than weird browser behaviour, however.

### Lack of comments

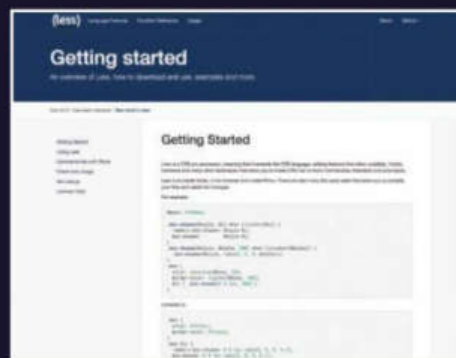
It's rare in vanilla stylesheets to need comments, so preprocessors present a bit of a mindset change when it comes to functions and mixins. Good comments can explain what the developer is thinking.



## Stylus

[bit.ly/1paZXwg](http://bit.ly/1paZXwg)

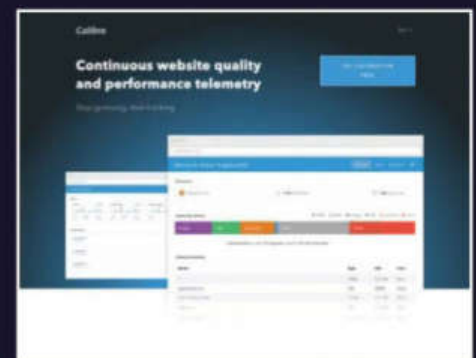
Stylus is a revolutionary new language, providing an efficient and expressive way to generate CSS.



## {less}

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

Less runs inside Node, in the browser and inside Rhino as well.



## Calibre

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

Continuous website quality and performance telemetry. Think Google Analytics for the frontend.

# Style guides: why you need them

## HOW TO BUILD WORKING DOCUMENTS FOR CONSISTENT DESIGNS

Style guides are a brilliant idea, however they are usually woefully executed in practice. The idea is that at any point in time there is a working document visible to the project team that captures the look and feel of core components - and this includes typography, buttons and form fields. What actually happens though is that the working document becomes stale and discarded by most of the project team, and that's because it captures the look and feel of the project from two months ago.

An out-of-date working document is pretty useless because the project team can't use it for anything they're working on at that moment - it simply gathers dust, becoming a relic.

There are probably many reasons for stale style guides, but the biggest standout is the associated maintenance cost. The cost to design and build a style guide once is mostly absorbed, as it should mirror the initial stages of the project. It's only when it takes extra time to keep this document in sync with the working project that it gets bumped in favour of any higher priority tasks.

The style guide idea is brilliant so long as the style guide maintains itself after the initial incarnation. Thankfully, modern tooling can help improve this situation somewhat.

### Build tasks

Create a build task to distribute postprocessed files to all relevant locations instead of just to the website. This should ensure that the style guide is up to date with any CSS or JavaScript as it's committed to the project.

### Team visible

Make the style guide available internally by hosting it on

an internally available URL. This gives everyone within the project an easily accessible and now up-to-date aesthetic reference.

It's also worth considering authoring a 'making contributions' document, which provides guidelines on how to contribute to the style guide project, all without actually being a developer.

### Seek design team contributions

Once a style guide is up to date and team visible, it's time to turn the style guide into the working document it was born to be. It's time to ask the design team to learn some code... sort of.

Following on from the CSS preprocessors section, the advice was to create a 'colours.scss' or similar. This file should contain all of the colour definitions used within a project and be trivial to update.

It's worth giving training on this process and basics on the preprocessor to the project team. This will enable the design team to have input on the look and feel of the site through the actual code, rather than being one step removed with concepts.

The colours example is very easy, but this could be applied to typography, buttons, form inputs and many of the other simpler aspects of build. The limit here is going to be the design team's knowledge of CSS, but fortunately though, these are the easiest aspects of CSS that a person can pick up.

The design team picks up basic aesthetic changes, which gives them more control over the end result of the build. They're also free to adjust margin and padding on elements and get it just right.

This should then free up the build team to focus on more fundamental and specialist problems, such as box model layout, code architecture and also flexboxes.

“A ‘making contributions’ document provides guidelines on how to contribute to the style guide project”

## Style secret

Consider choosing a styleguide generator that has a GUI which allows for non-technical users to make adjustments without having to write code. Sc5- styleguide has a demo for just that via [demo.styleguide.sc5.io](http://demo.styleguide.sc5.io).



## To follow

CSS3  
@CSS3

An account that is dedicated to CSS. It offer news, previews, tutorials and more for the discerning designer.

## Get better style guides



### A Maintainable Style Guide [bit.ly/1glFg13](http://bit.ly/1glFg13)

Craft a maintainable style guide, using it as a tool.



### Style Guide Generator Roundup [bit.ly/1zKLmQm](http://bit.ly/1zKLmQm)

A look at style guides that run on platforms.



### gulp-kss [bit.ly/1LA8BDy](http://bit.ly/1LA8BDy)

A gulp extension to help create of a style guide.

### sassdown [bit.ly/1JiMITr](http://bit.ly/1JiMITr)

Build living style guides with Handlebars.

### StyleDocco [bit.ly/1NAY3Ep](http://bit.ly/1NAY3Ep)

Generate documentation from your stylesheets.



# 5 Photoshop extensions

HOW TO ADD MORE POWER FOR FRONT-END DEVELOPERS



## CSS Hat csshat.com

Including any plugin that “writes code for the developer” is always going to be controversial, but CSS Hat does an okay job. When it comes to trying to scratch something together in minutes or unpicking several font styles at once - it can be a handy palette to have, especially for those who don't have a mental CSS encyclopedia.



## render.ly render.ly

If something needs exporting, **render.ly** is the right tool for the job. The basic premise is that each top-level group in a PSD is a ‘screen’ and child groups with names beginning with “&” get exported as separate states of that screen. **Render.ly** also generates webfonts for icons in vector format. No more manual image exporting from PSDs.



## InVision invisionapp.com

InVision takes designs and provides an interface for adding interactions - enabling designers to craft interactive prototypes complete with gestures, transitions, and animations. InVision also provides real-time presentation, collaboration and project management features. It's a cheaper route to designing effective UIs.



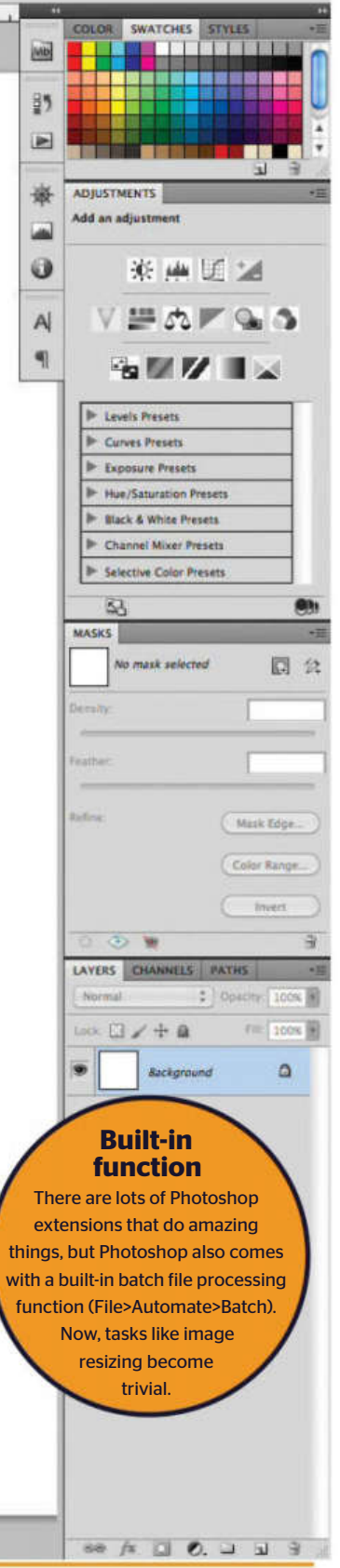
## Renamy klaia.com/Renamy

Renamy is a layer renaming power tool. It allows for renaming of multiple layers the right way. It can find and replace and even handles regular expressions. Those who grew up with CS2 would be jealous of this tool. An alternative use is to rename a colleague's PSD layers from 'New Layer 102' to 'Old Layer 102' just to upset them.



## Ink bit.ly/1KOSPIO

Ink is a free Photoshop plugin that generates documentation with detailed information on Photoshop documents and their layers/styles. For typefaces this is information on font family, weight, leading, size and colour. For images and other layer assets, dimensions are output. It spots minor inconsistencies at a glance.



**Built-in function**  
There are lots of Photoshop extensions that do amazing things, but Photoshop also comes with a built-in batch file processing function (File>Automate>Batch). Now, tasks like image resizing become trivial.





From the makers of **web designer**

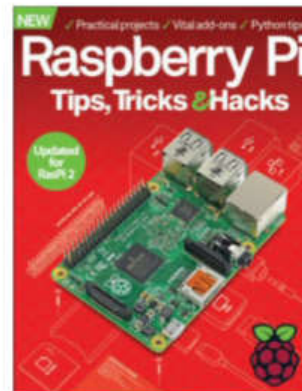
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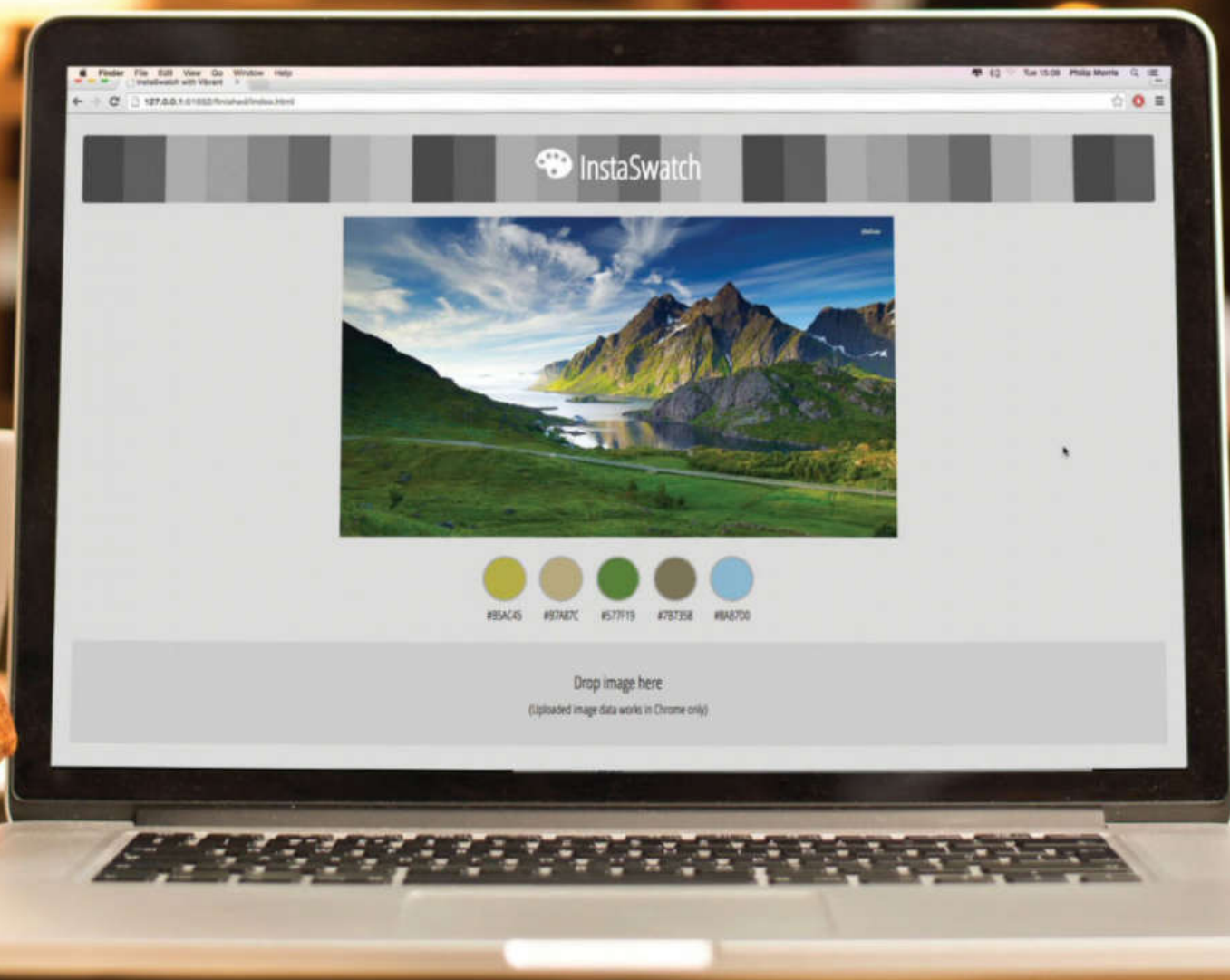
Digital edition available at [www.greatdigitalmags.com](http://www.greatdigitalmags.com)





# Create a colour swatch tool with Vibrant.js

Extract colour swatches from your images to use in your designs by dragging images onto the interface





Grabbing colours can be useful for a whole variety of uses and specifically extracting colours from an image.

Android developers have access to the

'Palette' class in the Android support library, but unfortunately this isn't available for general web developers. Jari Zwarts has taken the Android 'Palette' class and converted the code into JavaScript, meaning that anyone can use this in their own web projects.

This provides a great opportunity for us to create our own design tool that will extract colours from an image and display them on the webpage so that they can be used in our own designs by taking the hex colour. If you took this a little further, you could easily write some PHP to mail them to yourself, then you have a saved record of great swatches for future use.

Another way this could be used is if the user is creating a profile on a website and they drag their own image in. Using Vibrant.js it would be possible to set the user's background to a personal colour from the image. What this offers is a way to influence a personalised design for the user based on their image.

## 1. Link up Vibrant library

Open the start folder from the project files on FileSilo in a code editor such as Brackets. Open the index.html page and add the code below inside the head section of tags, which will link up the Vibrant JavaScript library. You can download the library from [github.com/jariz/vibrant.js](https://github.com/jariz/vibrant.js), but it's included in the project files as well.

```
<script src="js/Vibrant.min.js"></script>
```

## 2. Add the header

Scroll down to the body tags in the HTML document and add the header tag so that there is an image and heading on the page. This will be styled up later with CSS to give it

the right look. Do feel free to customise the name and logo for your own purposes.

## 3. Add the image holder

When a user drags an image onto the page the image needs to be displayed somewhere. An empty div tag with the ID of 'image' is created so that the image will be displayed in here later on when a user adds one.

```
div id="details">
<div id="image"></div>
<div class="col"><span class="swatch
colorVibrant"></span><span class="txt
textVibrant"></span></div>
<div class="col"><span class="swatch
colorMuted"></span><span class="txt
textMuted"></span></div>
<div class="col"><span class="swatch
colorDarkVibrant"></span><span class="txt
textDarkVibrant"></span></div>
```

## 4. Hold the swatches

When the image has been added it will be analysed using the Vibrant.js library, this will return the coloured swatches that will be displayed here on the page. There is also a 'drop' zone created so that images can be dropped on the page and then analysed.

```
<div class="col"><span class="swatch
colorDarkMuted"></span><span class="txt
textDarkMuted"></span></div>
<div class="col"><span class="swatch
colorLightVibrant"></span><span class="txt
textLightVibrant"></span></div>
<div id="drop">Drop image here
<small>(Uploaded image data works in Chrome
only)</small></div>
</div>
```

## 5. Start the CSS

Now move back to the head section of the document and add the stylesheet tag, then link to the Open Sans typeface from Google Fonts. This is added to the body tag so that all text will be in this typeface. The background of light grey is added as is the font size for the document.

```
<style>
@import url(http://fonts.googleapis.com/
css?family=Open+Sans);
body {
font-family: "Open Sans";
background: #dbddb;
font-size: 24px;
}
```

## 6. Add the header

Next in the CSS is to add the style for the header tag and we will give this round corners and white text to go over the background image. The background is a striped grey bar image that repeats to fill the size of the div tag.

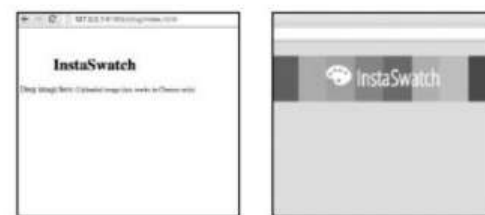
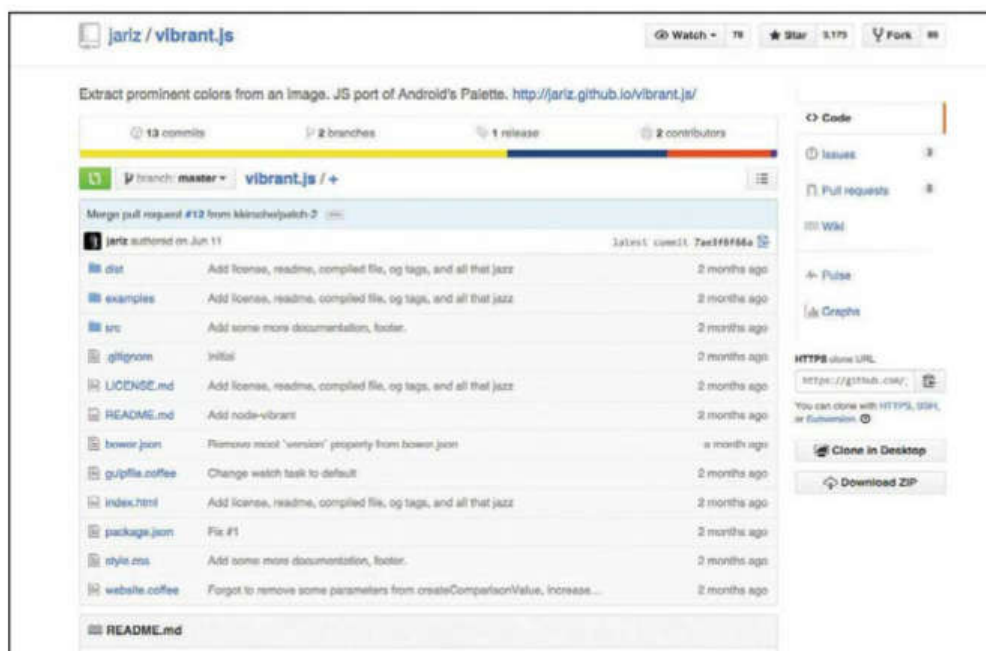
## 7. Design is in the details

The details section will display the image, the swatches and the drop zone for image. The col is the column to hold each swatch colour and text with the hex number.

```
#details {
text-align: center;
}
```

## Three basics of CSS

There are three ways to style your content with CSS. A full stop in front of CSS targets a class, a hash symbol targets an ID and just using a word will target the HTML tag.



### Left

The tutorial uses the Vibrant.js code library which is found on GitHub. The files are already included on FileSilo for your convenience

### Top left

At this stage all of the HTML that is needed is in place, but there is no styling yet on the design of the page

### Top right

The heading section of the page is designed with the logo visible and the right typeface in place. The background in here is a repeated PNG image denoting swatches



## Tutorials

# Create a colour swatch tool with Vibrant.js

```
.col {  
  display: inline-block;  
  padding: 20px 0 5px;  
  width: 80px;}
```

### 8. Add the swatch

When the swatch of colour is ready for display it is placed in a circle with a three-pixel grey border around it. This then fades in in one second with new colours inside.

```
swatch{  
  display: block;  
  height: 60px;  
  width: 60px;  
  margin: 0 auto;  
  border: solid 3px #aaa;  
  border-radius: 50%;  
  -webkit-transition: 1s;  
  -moz-transition: 1s;  
}
```

### 9. Display the hex number

The TXT CSS rule displays the hex colour under the colour. The drop ID is the area that the image can be dropped onto, in order to extract the colours.

```
.txt {  
  padding-top: 5px;  
  text-align: center;
```

```
text-transform: uppercase;  
}  
#drop {  
  padding: 40px 0;  
  margin: 20px;  
  text-align: center;  
  border-radius: 5px;  
  background: #ccc;  
  color: rgba(#000, 0.5);  
}
```

### 10. Add the image

The small text is placed into the design with a slightly smaller typeface and the image is given appropriate CSS to display it on the page. As you can see the image is never displayed greater than 50% of the browser width.

```
small {  
  display: block;  
  font-size: 18px;  
  padding-top: 10px;  
}  
#image img{  
  width: 50%;  
}  
</style>
```

### 11. Add the functionality

You can display the page in the web browser but it won't do anything yet. Move to just before the closing body tag and add the script tag as shown, then declare the variables we are using. The dropZone is the area that the image will be dropped on the screen.

```
<script>  
  var dropZone, handleDragOver,  
      handleFileSelect;  
  dropZone = document.getElementById("drop");
```

### 12. Drop an image

The following code will be called when an image is dropped onto the drop zone part of the page. There are some variables declared here and the event is stopped from propagating and any default action is prevented from running as we are defining our own.

```
handleFileSelect = function(event) {  
  var data, f, files, parseFile, progress,  
      reader;  
  event.stopPropagation();  
  event.preventDefault();
```

### 13. Read the file

As the image is dropped it is possible that multiple images might have been dropped, so the code reads only the first image. A variable reader holds the JavaScript file reader object in there and is used later. The progress function reads the image and extracts the colours.

```
files = event.dataTransfer.files;  
f = files[0];  
reader = new FileReader;  
progress = function(event) {  
  var e1, e2, image, results, swatch,  
      swatches, vibrant;  
  image = new Image(200, 200);
```

### 14. Read the image

The image variable grabs the event of dropping the image, takes the target which is the image and stores it. The image is displayed in the 'image' div tag on the screen. Vibrant is used to read the image and the swatches are stored in the swatches variable.

```
image.src = event.target.result;  
document.getElementById("image").innerHTML =  
  "";
vibrant = new Vibrant(image);
swatches = vibrant.swatches();
results = [];

```

**15. Loop through the swatches**

The 'for' loop code iterates through each of the swatches that has been brought back from the image. The swatch is read and then the results array gets ready to have the coloured swatch results pushed into it.

```

for (swatch in swatches) {
  if (swatches.hasOwnProperty(swatch) &&
      swatches[swatch]) {
    results.push((function() {
      var i, len, ref, txt, results1, results2;

```

**16. Store the results**

At this point the code checks the HTML and finds the appropriate colour class and the appropriate text class to add the colour to it so the user will be able to see it. Arrays are created to hold the results of the colour and the text, the square brackets show an empty array.

```

  ref = document.querySelectorAll(".color" +
    swatch);
  txt = document.querySelectorAll(".text" +
    swatch);
  results1 = [];
  results2 = [];

```

**17. Loop through the display**

For each of the swatches available on the HTML screen, the for loop moves through each and takes the colour of

the swatch, which is then stored as a background CSS property. The actual swatch hex is also displayed as text in the HTML of the page.

```

  for (i = 0, len = ref.length; i < len; i++)
  {
    e1 = ref[i];
    results1.push(e1.style.backgroundColor =
      swatches[swatch].getHex());
    e12 = txt[i];
    results2.push(e12.innerHTML =
      swatches[swatch].getHex());
  }

```

**18. Return the results**

This part of the code is simply closing down all the brackets of the if statements as well as the for loops. At the end of each section the results are returned, including no result if the image cannot be read or the file dropped is not an image.

```

  return;
})();
} else {
  results.push(void 0);
}
return results;
};

```

**19. Connect the functions**

As the image is dropped on the drop zone the code here connects up the functions already created. As the image is loaded the parseFile function is called, which in turn

calls the progress function. The image file is read as a data URL from the drop zone.

```

  parseFile = function(theFile) {
    return progress;
  };
  reader.onload = parseFile(f);
  return data = reader.readAsDataURL(f);
};

```

**20. Drag over**

When the image is dragged over the drop zone the following function is called. This will stop any default actions that are part of the way the interface behaves. The image is copied and stored in the event.

```

  handleDragOver = function(event) {
    event.stopPropagation();
    event.preventDefault();
    return event.dataTransfer.dropEffect =
      "copy";
  };

```

**21. Event handlers**

Now the final step is to attach the event handlers for dragging a file over and dropping it on the drop zone in the display. These call the functions that have been created earlier. Now save the page and test it on a web server or by clicking the 'live preview' button in Brackets.

```

  dropZone.addEventListener("dragover",
    handleDragOver, false);
  dropZone.addEventListener("drop",
    handleFileSelect, false);
</script>

```



# web workshop

## Make on-click pop-up tooltips

As seen on [dynamite.ch](http://dynamite.ch)

### Off-screen tooltips

The container element is also responsible for enabling additional horizontal elements to appear off screen until they are scrolled to.

### Background image

The background is created as a responsive image of double the container width to ensure that the effect works across all resolutions.

### Container to scroll

The container element has been used here to enable the map and all of the markers to scroll horizontally when the mouse hovers.

### Interactive markers

Markers can be clicked or tapped to reveal new content, and this enables the main design to remain clear when the content is not required.

### Moving background

The background image moves as the mouse pointer move - an illusion created with container overflow scrolling.



The use of hotspots and tooltips enables you to design your content, avoid your visuals for a clean appearance. These

two features involve the ability to allow additional content to scroll into view as the user moves their mouse pointer and the ability to present information when the user clicks on designated hotspots.

The ability to present information in this way provides benefit to design, especially where space is limited and/or where the presentation of information detracts from the website's usability - something that can be easy to forget when focusing on making a design look appealing.

There are different ways that these tooltips can be used. Anyone who remembers the game *Myst* will see how this game's concept is similar to the tooltip map created in this tutorial - where the game uses the tooltip concept to enable exploration and interaction with the game scenery instead of focusing specifically on using it as a method for accessing additional information.

This tutorial creates tooltips and hotspots used to present information about buildings in a city. A panorama image is used for the background, with clickable link elements placed over image locations that can trigger a pop-up box for access to a new page or website.



## Handy for preserving space

"Tooltips and hotspots are useful for allowing content to be presented in a way that is interactive and avoids clutter. This is good for usability experience as well as for presenting an appealing design - it's not often that a design feature ticks the boxes for both categories."

**Leon Brown, freelance web developer**

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

## EXPERT ADVICE

### Under the influence (of games):

Taking a look at the design of games like *Myst*, which use tooltips and hotspots, can help to identify ways that this concept can be used to increase engagement.

### Exploration

People like to explore. Use this as a feature that enables visitors to access new parts of the website in a way that is highly targeted to what they have shown an interest in being presented with.

### Challenge

Is there a way that your design can provide some type of entertaining challenge? Challenges can be a useful asset of social media marketing that gives your visitors a reason to share your content with others.

### Tracking

Designing the experience in a way that lets you reveal interests through interactions can be useful to help you understand more about your customers. It makes your marketing more targeted or can help to close sales.

## Technique

### 1. Establish the HTML

Create a text file called 'page.html' and enter our HTML from FileSilo - this will load the required CSS and JavaScript code as well as build the main page elements. The map is made from a block referenced data-map, with link elements inside for the tappable hotspots.

### 2. JavaScript Listeners

Create another file called 'map.js'. Then we will wait until the page has loaded and listen for mouse or touch movements on the <main> tag. JavaScript will set the horizontal scrolling position to that of the mouse/touch pointer when events are detected.

### 3. Define page body

The default style rules should be defined, preparing the <html> and <body> tags to cover the fullscreen width and height. This enables child page elements to be sized in relation to the page, they don't work for height by default.

### 4. Establish main styling

Create a file called 'styles.css' for your style rules to be placed in. The first styles to be created will set the size of the HTML, body and main elements - the latter being used as the container for our tooltip map. The <main> element has its overflow set to hidden to give the scrolling illusion.

### 5. Relative positioning

The element inside <main> has a [data-map] attribute that has the background image, relative positioning and a width of 200% of the <main> container width, ensuring that the content scrolls regardless of the size of <main>.

```
[data-map]{
position: relative;
display: block;
```

```
width: 200%;
height: 100%;
background: url('img/background.jpg') #000
no-repeat 0 0;
background-size: 100%;
}
```

### 6. Marker elements

Marker elements placed inside the [data-map] use absolute positioning that is relative to the [data-map]. Markers transition their colour when highlighted and have a default + sign as their visible content. Styling is placed ':before' the DOM element.

### 7. Marker content

Visible content that appears when a marker is selected is placed inside a child element of the marker that has a [data-content] attribute. This element is set as invisible by default, but becomes visible when the parent marker has been selected using the .target selector for the parent

```
[data-marker] [data-content]{
position: absolute;
display: block;
z-index: 1;
padding: 1em;
background: #ccc;
color: #000;
margin: 1em 0 0 -0.5em;
border-radius: 0.4em;
width: 15em;
box-shadow: 5px 5px 5px 0px rgba(0,0,0,0.75);
opacity: 0;
transition: opacity 1s;
}
[data-marker]:target [data-content]{
display: block !important;
opacity: 1;
}
```

### 8. Speech bubble

For this speech bubble shape, insert a rotated square before the [data-content] element.

```
[data-marker] [data-content]::before{
position: absolute;
background-color: #ccc;
content: "\00a0";
display: block;
height: 16px;
z-index: 0;
top: -8px;
transform: rotate( 29deg ) skew( -35deg );
-moz-transform: rotate( 29deg ) skew( -35deg );
-ms-transform: rotate( 29deg ) skew( -35deg );
-o-transform: rotate( 29deg ) skew( -35deg );
-webkit-transform: rotate( 29deg ) skew( -35deg );
width: 20px;
}
```

### 9. Style individual markers

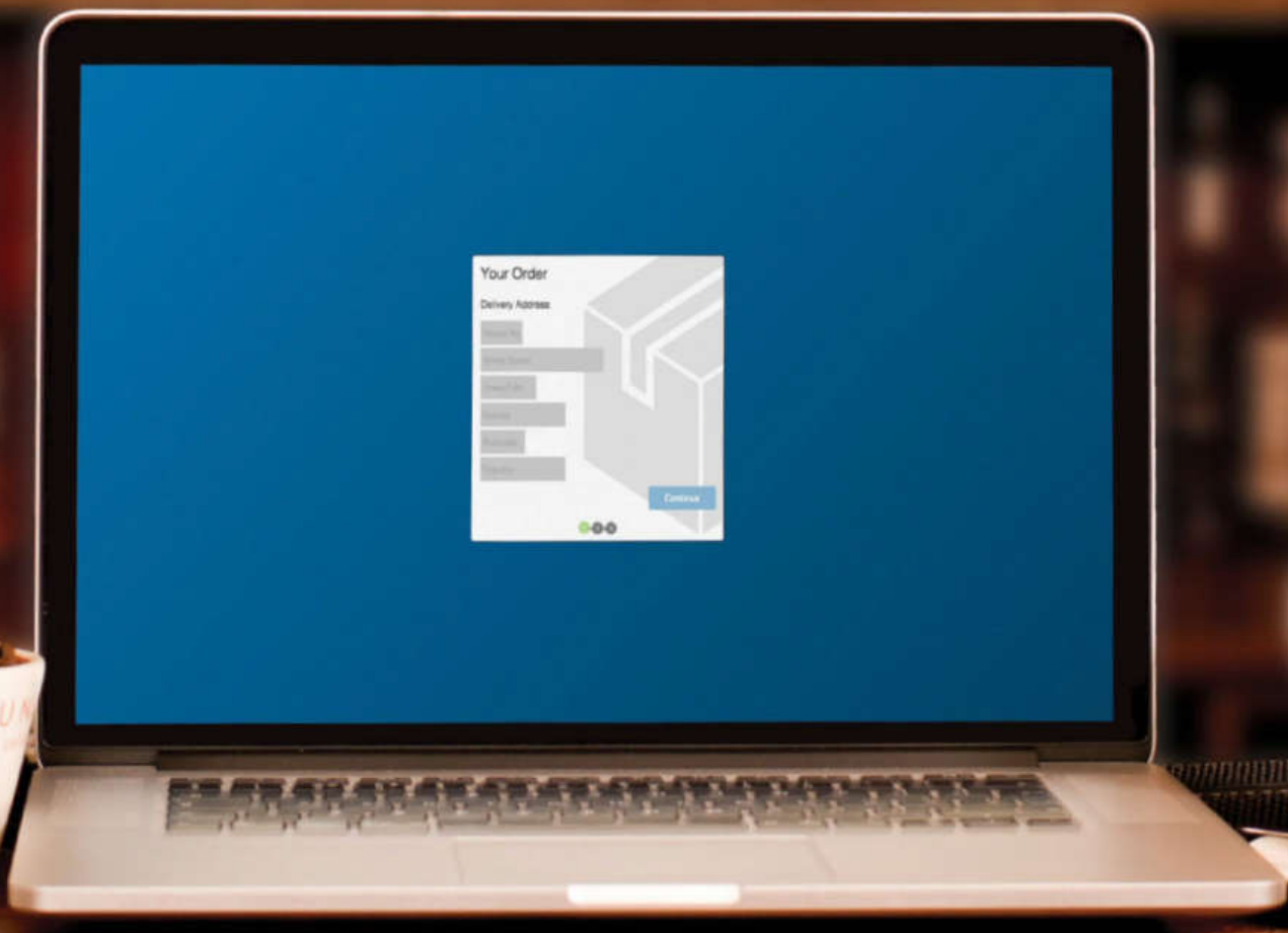
Individual markers need their positions to be defined and set with percentages so that they retain their intended position on the [data-map] background image.

```
#itemA{
top: 46%;
left: 24%;
}
#itemB{
top: 60%;
left: 37%;
}
#itemC{
top: 36%;
left: 68%;
}
```



# Enhance your UX with Hover.css and Font Awesome

Use Hover.css, a CSS framework that enhances HTML elements with CSS animations, to improve your UX





**F**orms are everywhere; search forms, log-in forms, order forms, complaint forms - all strewn across the web - their ubiquity is astounding! With all of these forms floating around vying and screaming for your attention it can be a little overwhelming when it comes to filling them, especially when there are many fields or a multipart process.

On the other hand, you may not notice it at all, perhaps you've become oblivious to their presence. Either way each new form and each new interaction comes with its own learning curve - some are natural to use, some are a nightmare, you might expect that there would be a standard way of presenting forms so as to reduce the effort, but there aren't any. Instead, there's the field of UX. When creating anything, considering the end-user - their experience and how we expect our users to respond to our web designs - is almost exclusively under review of UX specialists these days. In this tutorial, we're going to look at how we can enhance the UX our user forms with Hover.css with the aim of encouraging completion of the form filling process.

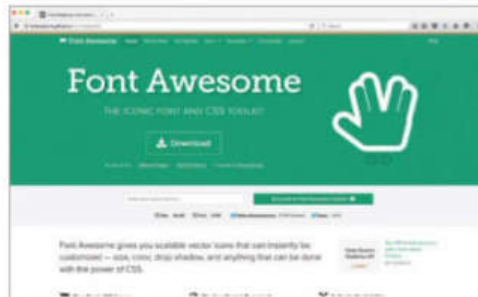
### 1. Grab the Hover.css assets

We need to make a few stops around the internet before we can kick off on this project. First of all, let's grab the poster child for this project. Head over to Hover.css's GitHub page [github.com/ianlunn/Hover](https://github.com/ianlunn/Hover) and download the entire repo.



### 2. Grab the Font Awesome assets

Font Awesome is not a packaged part of Hover.css, but it does play beautifully with it so we're gonna grab that and use it in this tutorial too. We can grab Font Awesome from [fontawesome.github.io/Font-Awesome/assets/font-awesome-4.4.0.zip](https://fontawesome.github.io/Font-Awesome/assets/font-awesome-4.4.0.zip).



### 3. Grab the base code

We're not going to be writing a great deal of code in this tutorial, instead we're going to enhance some prewritten code. You can still grab the files that you'll need from FileSilo though.

### 4. Put the Hover assets together

Now that we have all of the pieces, we need to put them together. Open the project assets from FileSilo, open the CSS folder, unzip and open the Hover.css repo we downloaded. Open the CSS folder of the Hover folder and copy the file hover.css to the project CSS Folder

### 5. Put the assets together

Unzip and open the Font Awesome repo, copy the 'Fonts' folder to the root of your project folder, then open the FA (Font Awesome) CSS folder. Copy the font-awesome.min.css file into your project CSS folder.

### 6. Load the CSS

Open index.html and add the following lines of code into the <head> tag of the document. Add them just before where we import our styles.css file. Now, we have hover.css and FA ready to go. We could access them from a CDN, but it's always best to have a local version in case the CDN fails or gets hacked.

```
<html>
<head>
<meta content="text/html; charset=utf-8"
http-equiv="Content-Type">
<title>Hover.css Demo</title>
<link rel="shortcut icon" href="favicon.
ico">
<link rel="stylesheet" href="css/hover.css"
type="text/css" />
<link rel="stylesheet" href="css/font-
awesome.min.css" type="text/css" /><link
rel="stylesheet" href="styles.css"
type="text/css" />
<meta name="viewport" content="initial-
scale=1.0, user-scalable=no" />
</head>
```

### 7. Change directory

We need a quick server to deliver our Hover.css page and resources. If you're on a Mac or Linux system, this is

## The power of UX

If someone wants to achieve something with a website or service but it's hard to do, they'll look for an alternative. By considering UX in your web design, you can almost always be certain people will leave happier.



**Left**  
Hover.css clocks in at 127KB. It's always helpful to reduce bytes where we can and fortunately, we can just take the bits of Hover.css we need rather than using the whole lot

**Top left**  
The forms we're using are very simple, they're only here to illustrate a point - in fact, Hover.css can be used in almost any context, but we're going to use it to help us sell books

**Top right**  
Font Awesome has a lot of assets, but don't worry about importing them. If we include the FA resources at a path relative to the CSS file, our browser will sort all of that

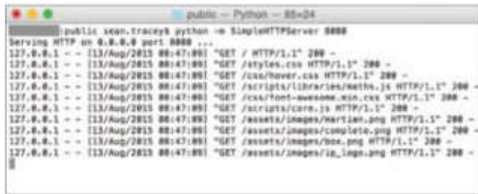
# Tutorials

## Enhance your UX with Hover.css and Font Awesome

super simple. Open up a terminal window, cd inside your project directory and run the following command:

```
$ python -m SimpleHTTPServer 8080
```

Now, if you open up a browser, you can see your webpage if you go to localhost:8080.



### 8. Our forms

Our page is pretty simple, fill in the form and click continue to proceed to the next form. Nothing too difficult, that is, unless something goes wrong. Using Hover.css we can enhance certain actions and draw attention to interactions as required. Using visual feedback, we can give our users a sense of progress without having to output any dialog which may distract.

### 9. The Continue button

Right now, our Continue button is entirely static. Using Hover.css we can create a small visual cue that suggests our form will proceed to another form rather than submitting and redirecting our user. In this case, we're

## Why Font Awesome?

The beauty of using a font for icons is we only make one request to get all of the icons, instead of making dozens of images across the site giving us much faster loading times. We also get the added benefit of scalable icons! No more pixels on your lovely Retina screen.

going to add a small arrow that moves to the right when the user hovers over our button.

### 10. CSS class is in session

Consisting entirely of CSS, the only way Hover.css has to interact with our DOM is through classes and attributes. To add an effect to an element, add the relevant class to the tag. Open index.html and add the class hvr-icon-forward to the button elements found in our first and second forms (around line 30 and line 40).

```
<input type="text" name="postcode" required placeholder="Postcode">
<input type="text" name="country" required placeholder="Country">
<button type="submit" class="hvr-icon-forward">Continue</button>
</form>
```

### 11. Invalids

Like most things involving people and computers, things can go wrong. A typical error in form submissions is a required field being omitted when the form is submitted. Each browser has a different way of displaying this error, but we can use Hover.css to signify that something isn't right before we let the continue.



### 12. Catch the error

On lines nine to 37 of core.js, which you can find in your scripts folder, there's some code that handles our forms

when a required field is omitted. With a little bit of JS we can change the appearance of the continue button when something has gone wrong. Let's make it shake back and forth when something is wrong. Enter the following code to line 34 of core.js

```
(function(btn){
  btn.setAttribute('class', 'hvr-wobble-horizontal');
  setTimeout(function(){
    btn.setAttribute('class', '');
  }, 1000);
})(form.getElementsByTagName('button')[0]);
```

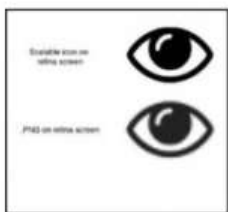
### 13. Taking what we need.

Hover.css isn't just about adding classes to things to make them do stuff for you, it can also be used as a modular-ish animations library. We can head into the CSS, pick out the animations that we will need, and simply tweak them until our heart's content. Open css/hover.css and then search for .hvr-skew-forward. Now copy that to your clipboard and then paste it at the end of styles.css

### 14. Adjust the CSS

Most animations from Hover.css will have several classes and pseudo-classes with different kinds of properties assigned. This is great when a user is actively interacting with an element, but it can also be really unhelpful when all you want to do is programmatically trigger an animation. Let's now take the content of .hvr-skew-forward, paste it with the CSS selectors [data-is-invalid=true]{} and then finally add the skew transform to the end of the rule.

```
for(var k = 0; k < allInputs.length; k += 1){
  if(allInputs[k].checkValidity() === true){
    allInputs[k].setAttribute('data-is-invalid',
```

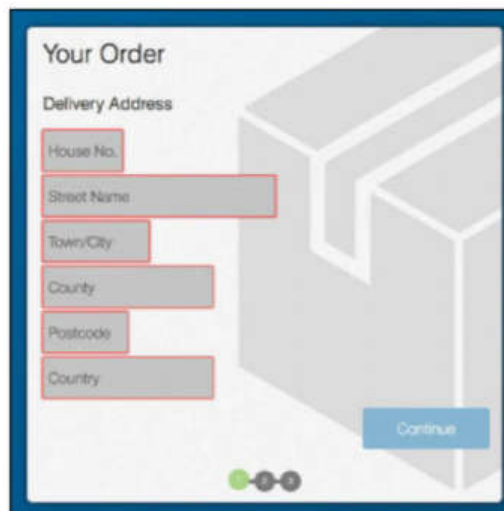


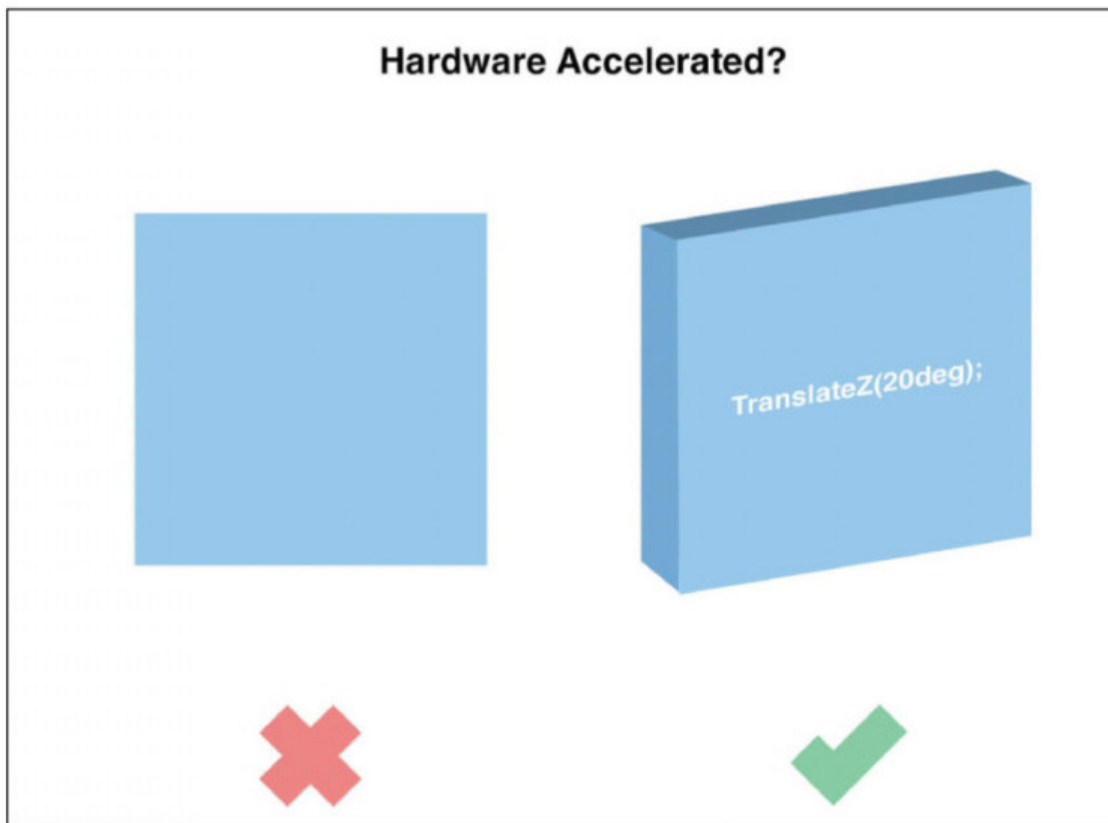
```
<form id="notesfo">
  <div id="progress">
    <span data-this:after">
  </span>
  <span data-this:after">
  </span>
```

**Top left**  
Scalable vector-based graphics are instructions that can draw images at any scale, we can have all of the pixels we need!

**Top right**  
::Before and ::after are immensely useful pseudo-elements that let us create and style content, but not all elements are blessed with the gift of pseudo-classes

**Right**  
Built-in UI can vary across browsers, by catching the validation error and creating our own error graphics and dialog, we can create a consistent experience



**TranslateZ**

If you've had a browse through the classes and rules of Hover.css, you may have noticed that almost everything will have the property `transform:translateZ(0)` and you may have thought this peculiar. "What's the point of it?" would be a very astute question. Animating elements of the DOM has never been an efficient process, for example on mobile devices dropped frames, stuttering and outright jumping about the place are a familiar sight. `Transform:translateZ(0);` is a little performance hack that kicks off hardware accelerated rendering. Adding a 3D transform to any DOM element triggers hardware rendering on that element. This means that that particular element will be rendered separately from the rest of your webpage by your computer's optimised graphics hardware rather than the CPU.

```
'false');
}
```

**15. The validation trepidation**

Now we have an animation in place that will draw our user's attention to the fields that have been left either unfilled or have had invalid values entered. Whenever we try to submit a form, every element that has a required or specified value will be skewed five degrees to the right until the user has remedied the situation.

```
*[data-is-invalid="true"]{
  vertical-align: middle;
  box-shadow: 0 0 1px rgba(0, 0, 0, 0);
  -webkit-backface-visibility: hidden;
  backface-visibility: hidden;
  -moz-osx-font-smoothing: grayscale;
  -webkit-transition-duration: 0.3s;
  transition-duration: 0.3s;
  -webkit-transition-property: transform;
  transition-property: transform;
  -webkit-transform-origin: 0 100%;
  transform-origin: 0 100%;
  -webkit-transform: skew(-5deg);
  transform: skew(-5deg);
}
```

**16. Progress process**

At the bottom of our order form, we have three dots which light up and show how close we are to completing the process, as we progress through the

process. A great number of form drop-offs occur because users don't know how far they are from completion. This little visual cue encourages our users to stay the course.

**17. Border animations**

To achieve this ripple effect, we simply add the `hvr-ripple-out` class to our progress markup. As we work through the order process, we can make use of the combination of data attributes and class names to highlight the process with colours, all without having to use too much of JavaScript.

```
CORE.JS (lines 28 - 29)
progressMarkers[progress].
  setAttribute('class', 'hvr-ripple-out');
progressMarkers[progress].
  setAttribute('data-this-far', 'true');
INDEX.HTML (lines 73 - 75)
<span data-this-far="true" class="hvr-
  ripple-out">1</span>
<span data-this-far="false">2</span>
<span data-this-far="false">3</span>
```

**18. Font Awesome icons**

Hover.css has its own built-in icon set for rendering arrows and special characters, which is great, because we can add scalable icons that look good on any kind of screen at any scale. To use FA icons, simple add an `<i></i>` tag with the class of the icon you want to use

```
<i class="fa fa-battery-quarter"></i>
```

**19. Back to the start**

At the end of our process we would normally take our user back to our store, but short of a lot more paper and time, we can't really re-create that process here. Instead what we're going to do is reset the process so that it can then be repeated. But what's the best way to show this? Well, we're going to add a slightly subtler animation from hover to the `#reset` button in our HTML `.hvr-underline-from-right`. This is only an animation of the border property of our button going from the end of our process right back to the start.

**20. Inputs beware!**

One final thing to note here is the input element. The HTML5 spec doesn't exactly allow for `<input>` to make use of the `::before` or `::after` pseudo-elements. Hover.css relies very *heavily* on the before and after tags though, so if you do decide that you want to use Hover to enhance your forms, make sure that you are careful in your selection.

**21. Rounding up**

That's it, now we've learned all about Hover.css and the power of animations in enhancing the lucrative user experience. It's certainly a subtle and sometimes, subjective art, but with the help of careful, thoughtful considerations and research into our resources, it's entirely possible to make good use of UX to benefit both our users and us as designers with the most powerful toolsets going.



# web workshop

## Create on-click fading transitions

As seen on groba.tv

### Fading transition

When the site loads, the user is required to click the screen to make the preloading panel fade out and the content fade in.

### Animated menu

Clicking the burger menu icon to access the menu causes the whole page to slide to the right, bringing the menu in from the left.

### Navigation

There is an icon in the bottom left of the screen showing that keyboard cursor keys can be used to navigate as well.

### Rollover effect

As the user rolls their mouse over the burger menu the lines crinkle up, giving a great effect to highlight the interactivity.



As an art director, illustrator and animator, **Airton Groba** has worked in a variety of visual arts from designing to digital advertising and interactive

content. Through working with a number of international clients, Airton knows that it's important to pay attention to visual extras that enhance the way content works. Bringing this experience to his own portfolio site **groba.tv** there is wealth of extras in here that really enhance the way the content is displayed with animated icons, transitions between icons and sliding transitions between content that works both horizontally and vertically. The

right-hand side menu switches to the bottom when content is sliding left and right as this enables the user to locate themselves in the overall site without getting lost and shows a good understanding of considering the user experience.

The illustrated content appears as the background on each section of the site and this is great because the content fills the background but has the downside of having the text over the top. To solve this, each page has a minus icon inside a diamond and when the user clicks on this, the content over the top fades out to reveal the illustration in all its digital glory.

### Navigation system

The area selected is shown with a cross icon. When the user clicks on a new section, the diamond animates into a cross.



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

### Informative illustration

"The idea was to create a website to promote my skills with an easy and practical navigation. I [highlighted] my last jobs, mixing 2D and 3D illustrations with graphic and digital design so that the user can see my work with all the details. The website is responsive, fullscreen and works with keyboard too."

**Airton Groba, freelancer**

## Technique

### 1. Fade out/in click

The **groba.tv** site features a preloading effect that fades out when the user clicks to reveal the site fading in. To start this effect, add the HTML content and image available on FileSilo.

### 2. Set up the CSS

In the head section of your page add some style tags and then add the CSS to style up the page. This includes setting the background to black, removing the padding and margin - this enables the preloader overlay to work.

### 3. Overlay a preloader panel

While a site loads, the preloader needs to sit over the top of the rest of the page to hide it. This is positioned absolutely over the other content with a higher z-index. The background is set to black to hide content below.

```
#preloader {  
  position: absolute;  
  top: 0; left: 0;  
  width: 100%;  
  height: 100%;  
  z-index: 100;  
  background-color: #000;  
}
```

### 4. Style the page

The rest of the content will sit in the 'content' div tag. Here the background image is made to cover the entire webpage and this div tag is given the width and height of the browser viewport in order to support that.

```
#content {  
  background: url(img/bg.gif) no-repeat center  
  center fixed;  
  -webkit-background-size: cover;  
  -moz-background-size: cover;
```

```
-o-background-size: cover;  
background-size: cover;  
width: 100%;  
height: 100%;  
}
```

### 5. Finish CSS touches

The last CSS rules position content in the middle of the page by centring the content vertically within the browser. The last rule hides the content of the page so that it can be faded in using jQuery to fade out the preloader and then fade in the page content.

```
.middle {  
  position: relative;  
  top: 50%;  
  transform: translateY(-50%);  
}  
.hide{  
  display: none;  
}
```

### 6. Bring it all together

The **groba.tv** site requires a click to move past the preloader so once everything has loaded, add the click function to the preloader, which fades it out and when that's finished the page content fades in. Load the page into your web browser to see the effect.

```
<script src="https://code.jquery.com/  
jquery-2.1.3.min.js"></script>  
<script>  
$(function() {  
  $( "#preloader" ).click(function() {  
    $( this ).fadeOut( "slow", function() {  
      $( "#content" ).fadeIn( "slow" );  
    });  
  });  
});  
</script>
```

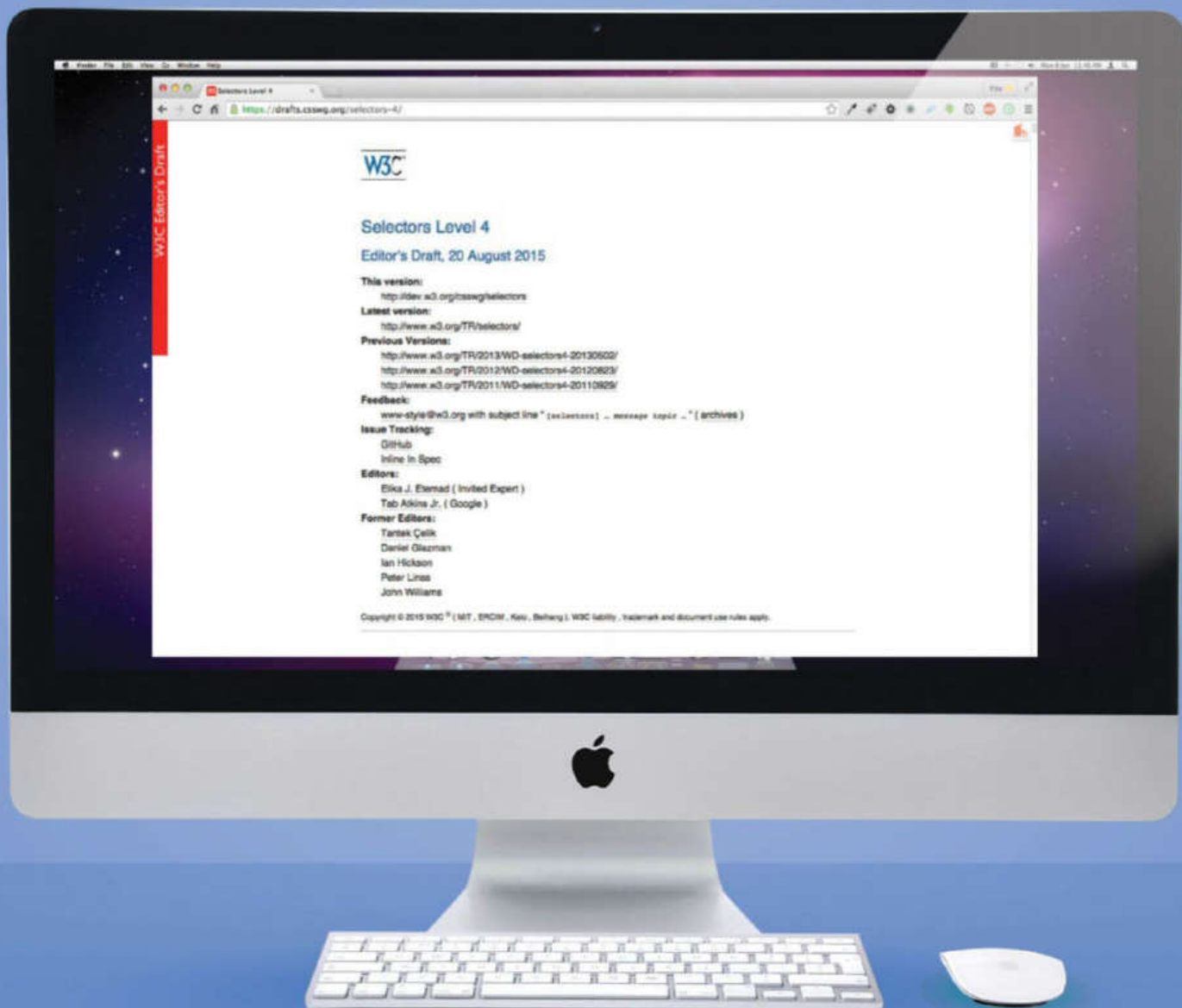
### EXPERT ADVICE

#### Keyboard control

The **groba.tv** website also features keyboard control, as well as the standard mouse control and clicking as found on other websites. This works because the site has transitions to content both horizontally and vertically, using the keyboard cursor keys gives a quick way to get around the site.

# Inside the latest CSS4 selectors

Take a look at some of the new CSS4 selectors and how we can use them right now





**P**rogress does not stand still, especially with CSS. Not that long ago we were introduced to the awesomeness of CSS3, which quite literally reanimated the way we build our webpages. But today we see the emergence of the new CSS level 4 specifications. This is very new of course and browser support for many of these CSS4 selectors are very poor, so we don't recommend using many of these in production. But in this tutorial we will take a look at the ones that are supported and also a quick peek at some of the ones that are not yet available, but will be very soon.

The specification explains selectors as patterns that match against elements in a tree. Most of the selectors from the Level 4 specification are pseudo-classes. No new pseudo elements were added, but it does seem as though they might be added in other modules in the future at some point.

As the development of pseudo-classes was paid a lot of attention, they are now at the fourth level and have gotten a lot of cool new additions. So in this tutorial we will take a closer look at some of these and how we can work with them!

## 1. The range pseudo-classes

The :out-of-range and the :in-range pseudo-classes, are used to style elements that have range limitations when the value that the element bound to is outside of the specified range limits. This is handy when you would like to add a date picker to your webpages or web app. In addition to this, you could just have a simple input field with a number range.

## 2. The HTML for the date picker

Let's suppose you wanted a simple date picker on your webpage. Perhaps you've got a booking page for

example. In any case we need to first add in the HTML and what we'll do here is we will set the range from 1974 to 1990 and set the default date outside of the range. This will then enable us to style it accordingly by using the 'range' label.

```
<input type="date"
min="1974-01-01" max="1990-02-01"
value="1973-01-01">
<label for="range"></label>
```

## 3. Style the date picker

So for us to see our date picker in all its glory, we need to add some CSS. First of all we will add in the :in-range rule that will indicate that it's in range by giving it a blue 1px solid border. And secondly we will add in the :out-of-range rule, which is default and is also indicated by a red 1px solid border.

```
input[type=date]:in-range {
outline: lightblue solid 1px;
padding: 1em;
}
input[type=date]:out-of-range {
outline: red solid 1px;
padding: 1em;
}
```

## 4. Out-of-range notification

We have styled our input borders with a colour red to show that the date is out of range. But we can also simply add a more dynamic notification by adding in some text to our page. So by targeting the 'label' element after the input field, we can add some content in green to give the user a more clearer indication of the date or number being out of range.

```
input:out-of-range + label::after {
content: "This value is out of range!"}
```

```
Please pick another one.";
color: green;
}
```

## 5. Number range

The other simple thing we can do with these pseudo-classes is to create a simple input field that has a number range. This would also be useful in a booking form where you would only want a maximum of 20 items, products or people perhaps. Here's the HTML and CSS for doing that:

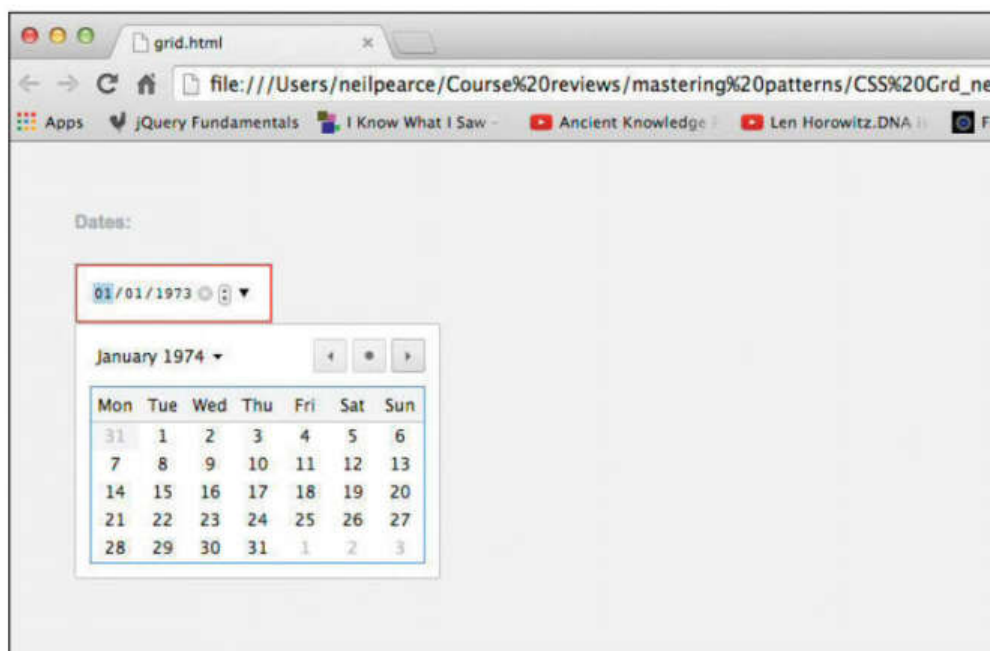
```
<h5>Numbers:</h5>
<input type="number" min="1" max="20"
value="0">
<label for="range"></label>
input[type=number]:in-range {
outline: lightblue solid 1px;
padding: 1em;
}
input[type=number]:out-of-range {
outline: red solid 1px;
padding: 1em;
}
```

## 6. Pseudo-class 'has()'

The relational pseudo-class, :has(), is a functional pseudo-class taking a relative selector list as an argument and this is very similar to jQuery's has() selector. The has

## Level 4 specification

The selectors Level 4 specification is currently in Working Draft status and an Editor's Draft can be found here: [drafts.csswg.org/selectors](https://drafts.csswg.org/selectors).



### Left

The date picker is a handy element to have and viewing this in Google Chrome will give you more options

### Top left

We've now added in the numbers range and you can see that this is almost as simple as the date picker, but also very handy

### Top right

Now that the out-of-range notification has been added to the CSS, it helps to make things more intuitive and useful

# Tutorials

## Inside the latest CSS4 selectors

isn't just another word for 'contains', which is how the jQuery method works, and this is because it can also mean 'has a specified element following it' or 'has an immediate child'.

### 7. Target containing elements

As mentioned in the previous step, the `:has()` pseudo-class can target an element that's being contained. This can then give us a great deal of control as to the elements of our choosing that we want to target and style. So in this CSS rule, we are simply targeting any section that has a header element and we will then change their colour to red.

```
section:has(h1,h2,h3,h4,h5) {
  color: red;
}
```

### 8. Target other elements

As mentioned there's more that we can do with this nifty little `:has()` pseudo class. The first rule in this code shows a way of targeting a paragraph which immediately follows an image. Then in the next rule we target a list item with a `ul` as a direct child. So as you can see we can get a lot of power using the `:has()` pseudo-class.

```
img:has(+p) {
  color: red;
}
li:has(> ul) {
```

## Browser support

Just remember that some of these selectors are in draft and are not yet supported by browsers. So make sure you test which ones are before using them in production.

```
color: red;
}
```

### 9. Logical combinators

The next few selectors we will look at are considered logical combinators or logical pseudo selectors. The first one we'll look at is the `:matches()` pseudo-class which can enable us to group and match items in our CSS document. Then what we'll do is we will take a look at the `:not()` logical combinator and see how simple and effective that is.

### 10. The `:matches()` pseudo class

The `:matches()` pseudo-class can save time and typing. Normally if we wanted to target a selection of elements such as anchor states, then we would specify them one after the other (shown in the code below as 'Old way'). But using `:matches()` we can pass in a list of parameters (shown below as 'New way') and get the same result.

```
/* Old way */
ul.menu li a:link,
ul.menu li a:hover,
ul.menu li a:visited,
ul.menu li a:focus {
  color: red;
}

/* New way */
ul.menu li a:matches(:link, :hover,
:visited, :focus) {
  color: red;
}
```

### 11. More complicated situation

The code we looked at in the previous step is pretty straightforward and hasn't really tested us much. So why

don't we try using it in a more complicated situation? The CSS rule is pretty self-explanatory and you can see the power that we would get from using this simple selector called `:matches()`.

```
section:matches(.active, .visible,
#veryimportant) {
  background: blue;
}
```

### 12. The `:not()` pseudo-class

The last logical combinator we are going to look at is the `:not()` negation pseudo-class. This was introduced in the CSS3 specification, but it became even more powerful in Level 4 with the ability to add multiple arguments. The code in this step will apply a red colour to all of our paragraphs to which the active or visible class are not assigned in the markup.

```
p:not(.active, .visible) {
  color: red;
}
```

### 13. Take it further

With the addition of the `:nth-last-child` pseudo-class we can combine the `:not()` pseudo-class with this to make a more complex selector. Now in this rule we are selecting all of the divs, apart from the ones that are direct descendants of `.container` elements and are the last two siblings. As you can see, these rules can get very powerful and complex.

```
div:not(.container>div:nth-last-child(-n+2))
{
}
```

### 14. `:read-only` and `:read-write`

These pseudo-classes are what we call Mutability pseudo-classes and they represent elements that either



#### Top left

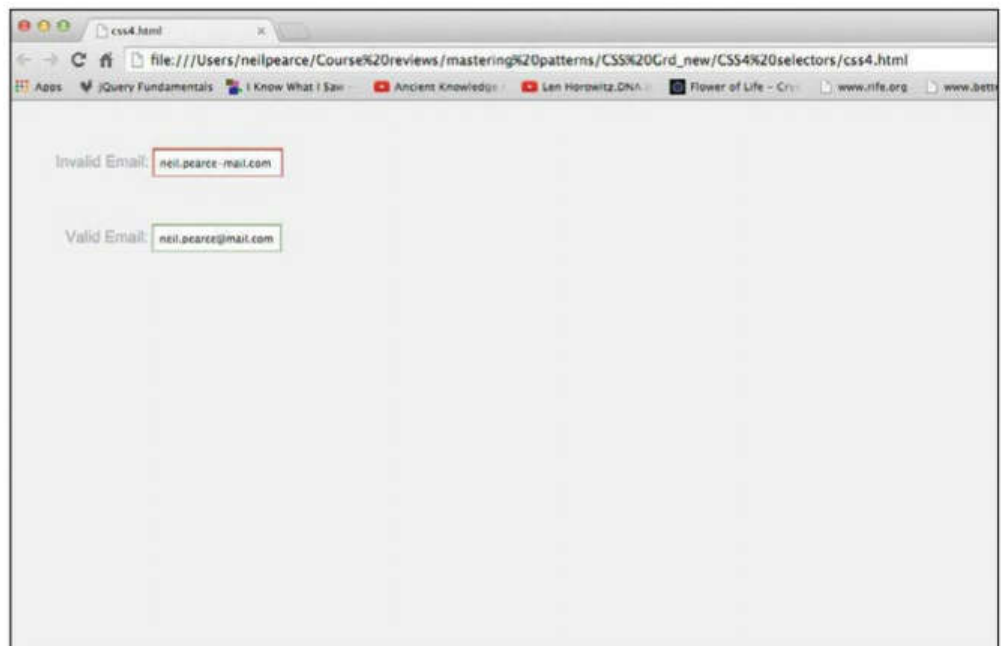
For us to see the `:read-only` and `:read-write` pseudo-classes in action, we first need to add some HTML

#### Top right

This is what the `:read-only` and `:read-write` input fields look like after some CSS has been added

#### Right

The `:invalid` and `:valid` pseudo-classes can be attached to an input field with an 'email' data type



HOME - ABOUT - BLOG

```
:local-link(1) {
  color: red;
}
```

```
:local-link(2) {
  color: green;
}
```

### Location pseudo-classes

The location pseudo-classes refer to the visitor's location on your site and should not be confused with geocoding. A couple of useful changes may be coming to them in CSS4. One that we looked at earlier in Step 20 is a hyperlink pseudo-class called `:any-link` in which stands for any element that is the source anchor of a hyperlink.

The second is the `:local-link` pseudo-class which styles hyperlinks, depending on the website visitor's location on the site. This pseudo-class also can differentiate between external and internal links, something we didn't really go into in great detail. The `:local-link` refers to an element that has a source anchor hyperlink whose target is the same as the element's document URL in non-functional use.

have or have not got user-alterable content. The `:read-only` pseudo-class represents an element that is not user-alterable and `:read-write` represents an element that is. So this is all pretty straightforward and over the next few steps we'll take a look at how we can put these pseudo-classes into practice.

## 15. Add some HTML

For us to see the `:read-only` and `:read-write` pseudo-classes in action, we will first need to add some HTML. So using some input fields we can specify in our CSS which input fields are disabled to the read-only state and which input fields are alterable.

```
<p>This input is "read only":</p>
<input type="text" readonly>
<br> This input is "disabled":
<input type="text" disabled>
<br> This input is normal:
<input type="text">
<div contenteditable></div>
```

## 16. The CSS

The CSS is pretty straightforward for this step. The first two elements that we have here will have a blue outline because they are set to 'readonly' and 'disabled' in the HTML respectively. Then you'll notice that the third element will have a red outline because it's naturally editable ('read-write'), and that's the same for all of the inputs by default.

```
input:read-write {
  padding: 5px;
  margin: 10px;
```

```
outline: solid 1px red;
}
input:read-only{
  padding: 5px;
  margin: 10px;
  outline: solid 1px blue;
}
```

## 17. Validity pseudo-classes

The validity psuedo-classes are very useful in HTML forms as they can give visual clues as to the validity of the data that the user has entered. This is something that would normally be done using JavaScript. The two validity psuedo-classes we're going to be looking at are `:valid` and `:invalid`.

## 18. Valid or invalid

A good way we can test out these validity psuedo-classes is to use an input type. So what if we wanted to check whether or not the input type that we have is an email? Well, let's first add in the HTML for an input type specified as 'email' and then, by making use of CSS we can check whether or not it's actually valid. If it's not valid then what we'll do is we will make the border red, but if it is valid then we'll make it green.

```
Email: <input type="email" required>
input[type=email]:invalid {
  outline: red solid 1px;
}
input[type=email]:valid {
  outline: lightgreen solid 1px;
}
```

## 19. Location pseudo-classes

In the next few steps we'll take a look at what is called location pseudo-classes. The first one we will look at is called `:any-link` and then we will take a look at `:local-link`. These location pseudo-classes will give us more control over the styling of links.

## 20. The `:any-link` pseudo-class

The `:any-link` pseudo-class gathers definitions of `a:link` and `a:visited` and then puts them into one, so that you don't have to write them both as you may normally need to. So now it no longer matters whether a link that has been visited or not as they will be styled the same either way regardless of either scenario.

```
a:any-link {
  color: red;
}
```

## 21. The `:local-link` pseudo-class

Our second pseudo-class `:local-link` is a lot more interesting and very handy. If you wanted you could give a different style to the links that target your homepage and you could then leave all others untouched. You could also combine the `:not()` pseudo-class and specify that any links that are pointing to the current page will not have text decoration.

```
nav :local-link {
  text-decoration: none;
}
:not(:local-link(0)) {
  color: red;
}
```



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CSS3, THREE.JS**



# How web 3D is influencing web design

## 3D MODELS ARE LEADING THE WAY FOR THE WEB TODAY

It is an exciting time in web development in regards to 3D. In the Nineties we had 256 colour animated GIFs of spinning text and email icons. In the 2000s we grew up a little by interacting with and spinning prerendered image sequences, but we had to use the Flash plugin to do it. Later Flash added features that enabled actual 3D rendering but development became painfully difficult for many developers. Then the Flash bomb dropped and the rise of mobile browsers began. Our designs and content had to simplify to pure HTML solutions in order to be supported by all devices. Otherwise we would be wasting development time and money building multiple versions of websites. With Flash slowly dying, modern browsers thankfully began upping their game to support new features. Developers have worked hard to create libraries that help us create interactive content to capture that old-school Flash magic again.

As a result of these changes over the past few years we can finally render, animate and interact with content in the 3D space without the need for plugins. All of those ideas, tricks and lessons that were learned in the days of Flash are now being revived. And fortunately we have

several ways we can execute all of those tricks and effects depending upon our individual skills or the needs, requirements and assets of our projects.

At its most complex level, immersive design, content and interaction can now be created in the browser with actual 3D models, textures, particles and assets using libraries like three.js which tap into the power of the hardware-accelerated WebGL drawing API. We can finally design, develop and dream of rich interactive 3D

content, and the best part is that most libraries fall back to Canvas API, which has even larger support. Canvas is a simpler drawing API that can create believable plexus animations, particle systems, emitters and mouse trails to look like 3D (although it does not support true 3D drawing like WebGL).

At a simpler level, CSS 3D has been a welcome addition to interactive 3D design and development of pure HTML elements. It has helped to add life to otherwise boring flat responsive design and basic UX grids. CSS 3D is easy to develop with, and anyone with a basic understanding of CSS can easily upgrade their designs. It's also robust enough that when combined with libraries like three.js or animation libraries like GreenSock can create jaw-dropping results.

**3D and iOS**  
 Want to produce 3D for Apple devices? Well now that the latest iOS versions support WebGL we can create dreamy content for the desktop that also work on a large percentage of mobile devices as well.

## The big three

### WebGL

This JavaScript API is great for rendering interactive 3D and 2D graphics within any compatible browser without using plugins. A great library for animating 2D (and soon basic 2D objects in 3D space) with WebGL is the Pixi.js rendering engine, which also has Canvas fallback.

### HTML5 Canvas

The HTML5 Canvas element is part of HTML5 and allows for dynamic, scriptable rendering of 2D shapes and bitmap images. It can be used to draw graphs, make photo compositions, create animations, or even do real-time video processing or rendering.

### Three.js

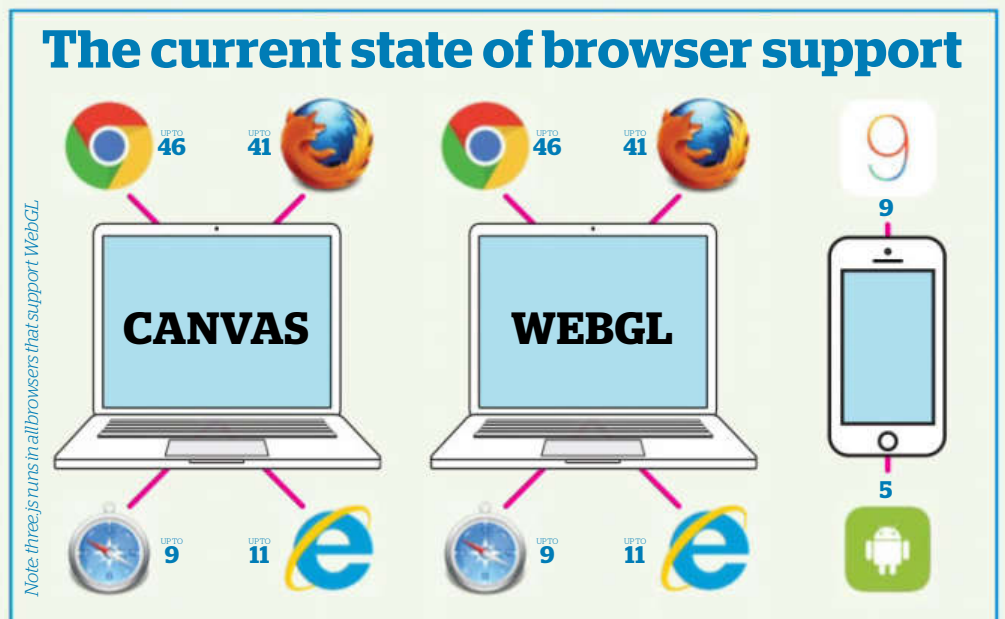
As a JavaScript 3D library, three.js makes WebGL simpler. While a simple cube in raw WebGL would turn out hundreds of lines of JavaScript and shader code, a three.js equivalent is only a fraction of that and much easier to create environments with.



**Shane Mielke**  
 @shanemielke

WebGL, designer, developer, animator, photographer, author and Cyberdyne Systems Model 101. Previously worked at 2Advanced.

“We can finally render, animate and interact with content in the 3D space without the need for plugins”



# Expert guide to web 3D



## 3D web graphics

For me the number one selection for 3D web graphics is Fuse ([fusetools.com](http://fusetools.com)). And yes, you can export WebGL with it. As a side product you'll be able to produce native applications for mobiles as well, which makes a lot of sense for heavy duties like 3D.

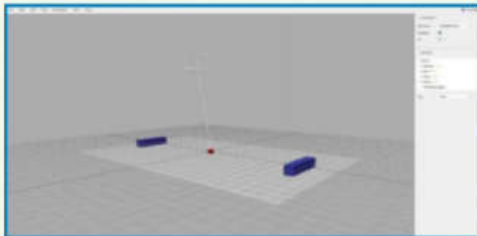
Fuse gives us a new programming language, called Uno, and it makes creating complex 3D renderers so much easier.



## 3D modelling

I do a lot of my 3D modelling in procedural fashion, with maths. But once in a while you need to work with actual models. Here I would select Blender [blender.org](http://blender.org), simply because it's free, easy to use and has a big community behind it. It's easy to find freelancers to help you in case of an emergency.

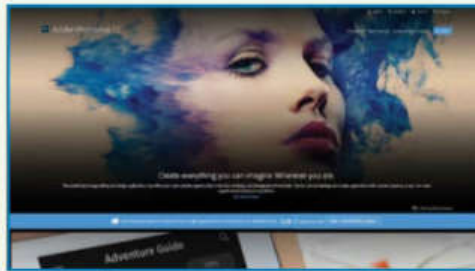
## 6 more 3D resources



[threejs.org/editor/](http://threejs.org/editor/)



[unity3d.com](http://unity3d.com)



## Textures and graphics

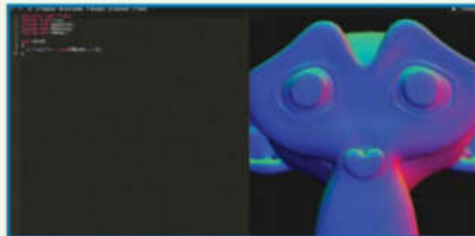
When it comes to textures and other graphics, it's still Photoshop that wins ([adobe.com/fi/products/photoshop.html](http://adobe.com/fi/products/photoshop.html)).

# The ultimate 3D toolkit

## WHAT RESOURCES AND GUIDES DO YOU NEED TO START CREATING?



As we've already mentioned, in the world of web 3D the big technologies and tools are WebGL, HTML5 Canvas and three.js. These are at the forefront of bringing a new dimension to the web. But to build beautiful creations, as every designer developers knows, a collection of your own favoured resources are always needed. **Web Designer** spoke to real-time graphics craftsman and the man behind [apexvj.com](http://apexvj.com) Simo Santavirta. He gave us an insight into the tools and resources he uses to help create his dynamic online experiences. Check out his work at [simpapa.fi](http://simpapa.fi).



[shdr.bkcore.com](http://shdr.bkcore.com)



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



## 3D and mathematics

I don't think you need any more tools than that. But what you do need is more knowledge and skills (along with years as well).

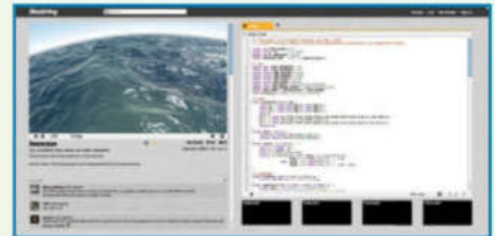
Creating 3D is a lot about mathematics and rendering techniques, so you better know your trigonometry. I would recommend refreshing your memory of it by watching Khan Academy's videos about trigonometry by going to [bit.ly/1FJSTEV](http://bit.ly/1FJSTEV) (really wish I had resources like this when I was a kid!).

Also no matter what language or tools you're using, the same rendering techniques will apply. When you reach a certain level, Nvidia's GPU Gems can come in handy: [bit.ly/1EBuXCo](http://bit.ly/1EBuXCo).



## Inspiration

If you're in need for inspiration try [pouet.net](http://pouet.net). This has pretty much every real-time graphics demo ever made. A must-see for those looking to get into web 3D.



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



[meshlab.sourceforge.net](http://meshlab.sourceforge.net)

# Making fireworks with three.js

## BUILD A SIMPLE SCENE, ADD TEXTURES TO MATERIALS, CREATE LIGHTS AND BLOW THINGS UP

WebGL is one of the best things about the modern web. We, as developers, looked at 3D modelling, shading, rendering and all the other things that come with the realm of the third dimension. The use of 3D graphics in the browser enables us to make the best of real-time graphics generation with just pure JavaScript. Rendering *anything* in 3D is a far more complex process than drawing a square on a <canvas> element, but with complexity comes difficulty in implementation. Fortunately, three.js is here to help us. It's a JavaScript library that helps us write WebGL content without having to worry about a great deal of maths or 3D rendering computer science (well, not too much). Think of three.js as a kind of jQuery for WebGL, everything is simpler and follows patterns. There's no more fiddling about with polyfills or trying to get things to light consistently. Get the full code for this tutorial at [filesilo.co.uk/webdesigner](http://filesilo.co.uk/webdesigner).

### 1. Grab the resources

Three.js has a ton of helper libraries and other code bits to help it get on with its work. We're going to use the core three.js library and the OrbitControls.js library to handle our camera movements. Download the project files from FileSilo and have a look around the scripts folder.

### 2. Set up the renderer

The meat of our program is in scripts/fireworks.js. In the init function on lines 181 - 199 we create a renderer, which is where our 3D scene will be drawn to. We then create and position a camera to see with and point it at 0,0,0 of our scene. Whatever happens in front of our 'camera' is what will be shown on our rendering element.

```
renderer.setSize( window.innerWidth, window.innerHeight );
document.body.appendChild( renderer.domElement );
camera.position.x = 2;
camera.position.y = 43;
camera.position.z = 35;
camera.lookAt( new THREE.Vector3(0,0,0));
```

### 3. Set the scene

Next we call createScene(). Here, we create the ground for our scene and some light (which we call moonlight) to light up our scene. Without light in our scene we won't be able to see anything. The ground and the moonlight are added to our scene with 'scene.add(OBJECT)':

```
var groundTexture = new THREE.ImageUtils.loadTexture( '/assets/images/ground.jpg' ),
groundGeometry = new THREE.PlaneBufferGeometry( 150, 150, 32 ),
groundMaterial = new THREE.MeshPhongMaterial( {side: THREE.DoubleSide, map: groundTexture} );
ground = new THREE.Mesh( groundGeometry, groundMaterial );
```

```
moonlight = new THREE.PointLight( 0xffffff, 1, 100 );
moonlight.position.set(0, 10, 5);
scene.add( ground );
scene.add( moonlight );
```

### 4. Rendering

Now that we have some things in our scene that we want to see, we can tell three.js to render them. We use requestAnimationFrame() to call our render function which will draw our scene as close to 60FPS as your computer can handle with 'renderer.render( scene, camera );'. Right now, you'll only see illuminated turf.

```
renderer.render( scene, camera );
requestAnimationFrame( render );
```

### 5. Set off a firework

If you press Space, a colourful firework will set off into the sky and then detonate. In addEvents(), we push a new firework() to our fireworks array and once there, our render function will work through and draw every firework we've set off.

```
window.addEventListener('keydown', function(e){
if(e.keyCode === 32){
// (Radius, Width, Height, Color)
fireworks.push(new firework( 0.2,32,32, new THREE.Color( colors[Math.floor(Math.random() * colors.length)] ) ));
ground.material._needsUpdate = true;
} }, false);
```

### 6. Detonation

What is a firework anyway? Well, in this context, it's an object that will keep track of the position, velocity, sparks and light sources of our firework as it travels to its beautiful, but ultimately tragic demise. Once our firework reaches a certain height above our ground, it will explode and animate our explosion with the detonate() function on lines 60 - 82.

### 7. Light 'em up

Our fireworks need to make light that shines on other things around it. The material that makes up our fireworks in flight can't (easily) do this on its own, so instead, we create a new light the same colour as the firework in the same place. Do this with 'this.light = new THREE.PointLight( color, 10, 4 );', which you may notice is the exact same way we created moonlight.

```
// Line 29
this.light = new THREE.PointLight( color, 10, 4 );
// Lines 96 98
f.light.position.x = f.object.position.x;
f.light.position.y = f.object.position.y;
f.light.position.z = f.object.position.z;
```

### 8. Particles and CPU cycles

When our firework explodes, we want to see colourful sparks, but do we really want to render dozens of new objects to do so? No, we don't. Instead, we can create a point cloud, which is a fancy way of saying a particle system. This is basically one big object, but made up of loads of little bits with space in-between, it's much friendlier for our graphics card.

### 9. The sparks

On lines 38 - 44, we create a point for each spark that we want to have and give each a random velocity. On lines 47 - 53 we tell three.js what size and colour we want our particles to be and then we add them to the point cloud on line 55. As a cheat, we add a JPG to each of our sparks to fine-tune how each point should look. On lines 100 - 110, we check how high our firework is, whether or not it should explode and whether or not we should be animating it if the explosion has started.

```
var sparks = new THREE.Geometry();
for (var i = 0; i < Math.random() * 1000 | 0; i ++ ) {
var spark = new THREE.Vector3(0,0,0);
spark.velocity = [ Math.random() Math.random(), Math.random() Math.random()];
sparks.vertices.push( spark );
}
this.sparkMaterial = new THREE.PointCloudMaterial( {
size: 1.5,
map: THREE.ImageUtils.loadTexture("assets/images/spark.jpg"),
blending: THREE.AdditiveBlending,
transparent: true,
color : color
});
this.particles = new THREE.PointCloud( sparks, this.sparkMaterial );
```

### 10. Remove particles

A firework doesn't last all night. So once it's petered out, it's probably best to forget about it, otherwise it's just going to clog up our computer's memory. If we pass through our firework and its lights to the removeObjectFromScene() function on lines 19 - 22, three.js will remove our asploded fireworks from the scene and GC will take care of the rest.

```
// Lines 106 110
} else if(f.hasDetonated && f.explosionLight.distance <= 1){
removeObjectFromScene(f.explosionLight);
removeObjectFromScene(f.particles);
fireworks.splice(aa, 1);
}
```



# How did they build this?

CHIEF DEVELOPER AND CREATIVE CARLOS ULLOA REVEALS THE SECRETS BEHIND THE BUILD OF THE PENNY SKATEBOARDS 3D EXTRAVAGANZA



### Dynamic

The customiser WebGL app is fully dynamic, it lets you change board size and select wheels, trucks and bolts. Each part can be configured individually for unique results. It also uses real-time inventory data from a Magento eCommerce backend to present the user with options currently available. Loading time is optimised by preloading 3D models and textures in different batches using CreateJS ([createjs.com](http://createjs.com))

### Share

Once the board is complete, the user is given the option to ride it, similar to a skateboard game. Using the share functionality users can invite their friends to ride their creations. The related image used on social networks is also created dynamically, rendering and uploading to the server a snapshot of each board.



BACK SKATER FACEBOOK TWITTER CART

Name of site	<b>Penny Skateboard Customiser</b>
URL	<a href="http://bit.ly/1JzLRBj">bit.ly/1JzLRBj</a>
Designer	HelloEnjoy
URL	<a href="http://helloenjoy.com">helloenjoy.com</a>
Time to complete	Six months



## Carlos Ulloa

*Interactive designer*

“Building a product customiser using interactive 3D gives us complete control of how the product appears. It allows the user to virtually grab an object and look at it from any angle, like we do in real life. It also makes possible to change colours, materials and entire parts in real-time.”

## The limitless potential of three.js

### USE THREE.JS TO MAKE ANYTHING, FROM GAMES TO ROTATED PRODUCTS

Three.js takes away a lot of the headaches for you and gets you started faster on making some seriously cool content. While a simple cube in raw WebGL would turn out hundreds of lines of JavaScript and shader code, a three.js equivalent is only a fraction of that and much easier to code and create environments with. It's an amazing tool that lets you either bring in existing 3D assets or create your own using primitive 3D shapes. The potential opportunities are limitless with the right projects, assets or more importantly ideas. Although you should beware, that it's definitely not something you can

or should use for everything. While WebGL is supported on all modern browsers and has recently picked up a lot of mobile support being enabled on iOS devices it won't work everywhere. Depending on what you're executing or where you're trying to display your cutting-edge 3D, content may also be pretty processor-intensive and affect mobile usage. But it has its place in our toolbox and should be used anytime you need to create, animate or load 3D scenes in the browser.

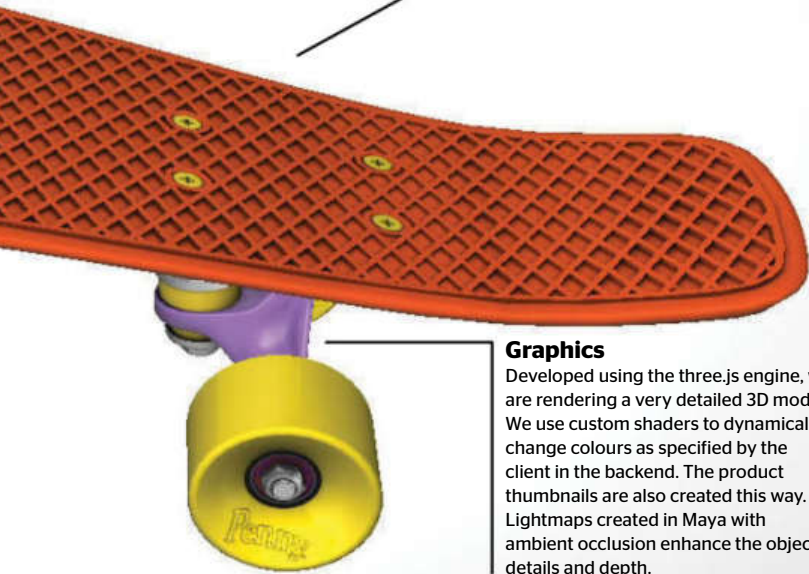
We would also warn about the expectation or desire to create photorealistic environments with these new



CLEAR

### Mobile

The experience is optimised for mobile, using the entire browser window. When running on desktop, higher resolution 3D models and textures are used. Both mouse and touch input methods are fully supported, and special care was put into making the interaction tactile and intuitive. The UI is fully responsive and supports Retina resolutions using SVG graphics.



### Graphics

Developed using the three.js engine, we are rendering a very detailed 3D model. We use custom shaders to dynamically change colours as specified by the client in the backend. The product thumbnails are also created this way. Lightmaps created in Maya with ambient occlusion enhance the object details and depth.

### Web 3D and realism

The key is creatively executing the content in a way that is stylised so that it doesn't have to be real looking - it just needs to be immersive emotional, memorable and interactive.

tools and browser feature, or trying to match the lighting or render style that can be found in popular 3D applications. It's an expectation that should never be set, especially to clients. It's important to remember that we're working with 3D in a web browser. Nothing will ever compare to the realism of real photo/video content or 3D quality that comes from hours of rendering passes in a 3D app.

Movie studios spend years of development time and millions of dollars creating custom special effects and 3D scenes for non-interactive blockbuster feature films that we are supposed to believe are real. Only the best movies with the craziest budgets and the best teams actually make the CG content feel natural.

Fortunately the web has its own version of cinematic which is completely different from what you experience in real life or in a movie. We are allowed to bend the rules and create stylised fictional worlds and experiences that don't have to be 100 per cent realistic.

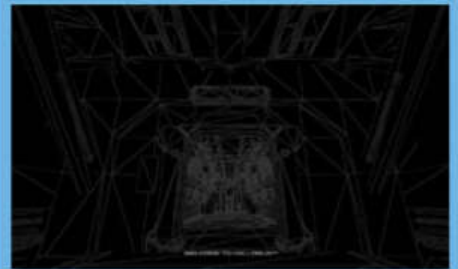
The web is a magical playground of opportunity which enables us to combine all sorts of different styles, creative assets and tools to create unique interactive experiences. They can look however we want it to as long as it is authentic and compelling. That's what differentiates the web from a movie or a photo. And that is where having a tool like three.js, to make the process simpler, is vital.

## Expert guide to web 3D

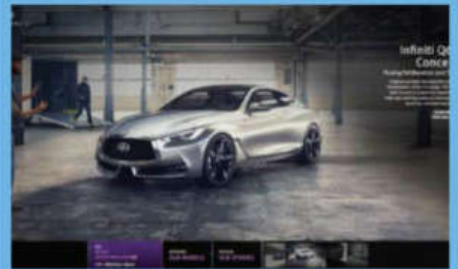
# More from Hello Monday

4 MORE IMPRESSIVE 3D PROJECTS

**Hello Run**  
[bit.ly/18SB7bS](http://bit.ly/18SB7bS)



**Infiniti Q50 Eau Rouge**  
[bit.ly/1hq1pMe](http://bit.ly/1hq1pMe)



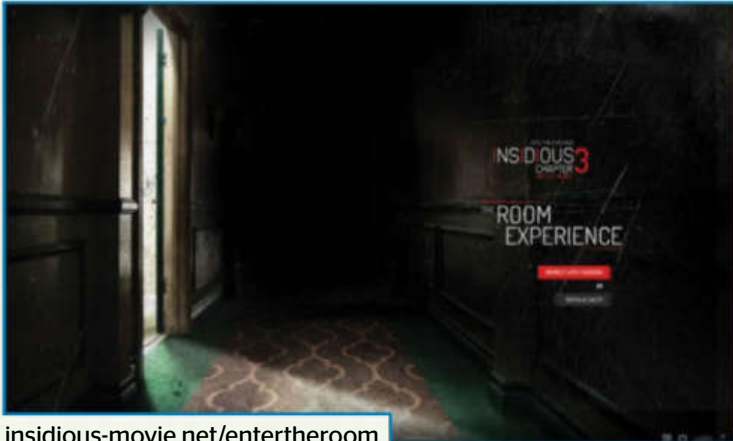
**Samsung Racer S**  
[bit.ly/1U7XVjX](http://bit.ly/1U7XVjX)



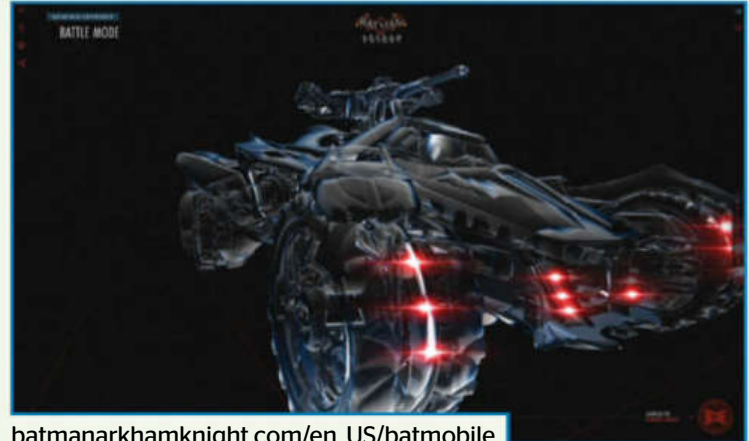
**Lights by Ellie Goulding**  
[bit.ly/1kv8Xga](http://bit.ly/1kv8Xga)



## Expert guide to web 3D



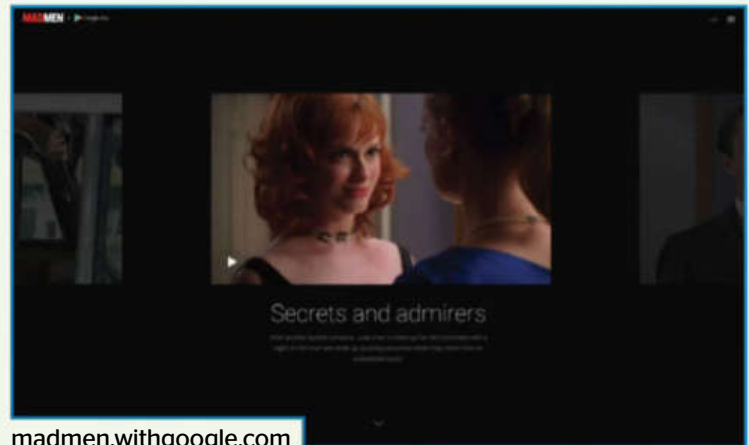
[insidious-movie.net/entertheroom](http://insidious-movie.net/entertheroom)



[batmanarkhamknight.com/en\\_US/batmobile](http://batmanarkhamknight.com/en_US/batmobile)



[shanemielke.com/archives/usopen-sessions](http://shanemielke.com/archives/usopen-sessions)



[madmen.withgoogle.com](http://madmen.withgoogle.com)

## What can be achieved with WebGL and HTML5 Canvas

### WANT TO MAKE 360-DEGREE VIDEO SEQUENCES FOR THE WEB? WELL NOW YOU CAN

#### What can be done with WebGL and HTML5 Canvas?

**So where do we start with the two?** Pretty much anything you can dream of can now be done in the browser without a plugin. In fact there has been a revival of old concepts, ideas and executions that were previously done with Flash that have risen from the ashes. This has prompted the old-school Flash developers to often say 'We did that in Flash a long time ago. This is nothing new or cool'. In this new era of web-based interactive 3D development, individuals with experience in those old ideas, skills and motion sensibilities are highly sought after commodities by studios around the world looking to create cutting-edge content that works on both desktop and mobile.

So whether it is 3D or 2D content, both the WebGL API and Canvas API give us a set of drawing tools to create and manipulate assets with better performance, control and effects than we can currently achieve with pure HTML elements.

Keep in mind that both have different strengths, weaknesses, limitations and JavaScript libraries which can help you develop content. When choosing which to

use, one must consider the usual things we consider on all projects. This includes the end creative goal, time to develop, what assets we have to use or create and the eternal nemesis of all web developers - browser support.

#### CANVAS

The Canvas API has been around longer and has deeper support on all browsers including Internet Explorer (IE9 and up). It also has full support on older Android and iOS browsers, but it is definitely a simpler drawing API. There's no true 3D support, so you cannot load models with textures or do complex 3D scenes with crazy lighting, rendering or shaders. Though you can use the drawing tools and good old maths to create basic 3D shapes or you can fake it by creating and manipulating assets in ways that give the illusion of 3D.

Just like the early days of Flash, things like plexus animations, particle systems, emitters, mouse trails are all

fair game in Canvas and can really give the feeling of 3D space. You'll see a lot of these types of elements in the backgrounds or footers of websites to add that extra immersive punch. It's also great for making things like charts or graphs.

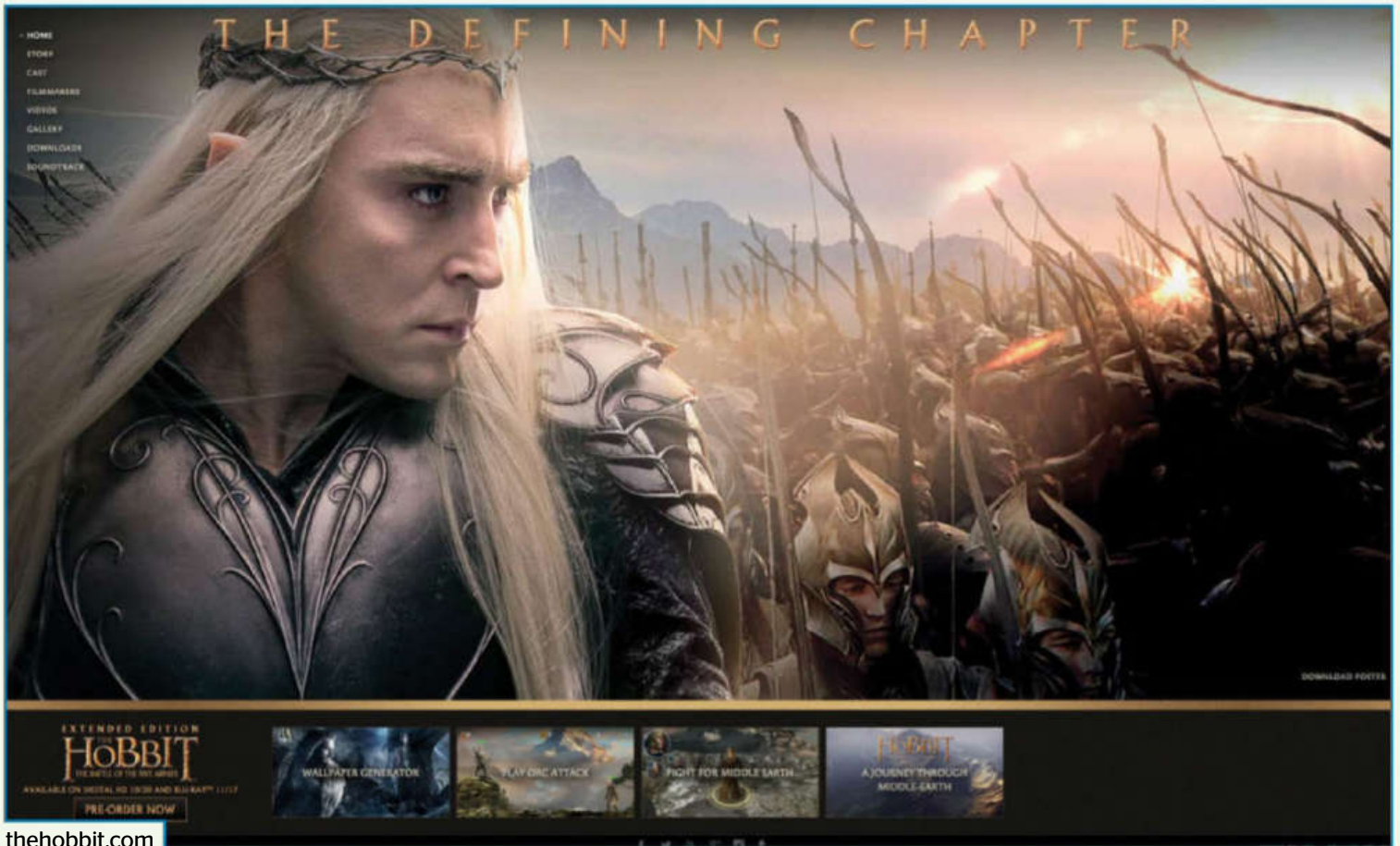
Canvas is also an amazing asset for boosting performance when handling prerendered 3D content like 360-degree image sequences or videos. Performance when interacting with a Canvas-based 360 created from JPGs is exponentially faster across all browsers and with less bugs than manipulating the same assets in HTML.

#### WEBGL

On the other hand, WebGL has the more advanced 2D and 3D drawing API. It's actually been around for years but does not have the depth of browser support like Canvas. It works on all modern browsers but unfortunately only works on the most recent versions of

**“Both the WebGL API and Canvas API give us a set of drawing tools to create and manipulate assets with better performance”**





thehobbit.com

Internet Explorer (IE11 and up). It is supported but not enabled on all Android devices and was recently enabled on browsers for devices that are iOS 8 and up. So the WebGL handcuffs have been removed on mobile (sort of) and we can start having fun creating some singular solutions that work on all systems and devices.

Using a library like three.js to help we can easily draw or load true 3D assets in the browser to create some really cool interactive 3D content in a short time. With three.js you're limited only by your ideas.

It can be used on any project that has existing 3D assets available. A great example of this is the *Batman: Arkham Knight* Batmobile Experience ([batmanarkhamknight.com/en\\_US/batmobile](http://batmanarkhamknight.com/en_US/batmobile)) for Warner Bros. by Five & Done ([fiveanddone.com](http://fiveanddone.com)). On this Batmobile project a fully detailed 3D model was provided by the client and then three.js was used to create, load, animate and interact with the scene. There were some initial concerns about WebGL and a browser being able to exactly match the lighting and style of the in-game graphics. So a more holographic style was explored using a Fresnel shader as a way to make the experience feel unique without the pressure of replicating the game or what a final rendered artwork would look like.

**Canvas Drawing**  
For a great example of the Canvas Drawing API in action, check out *The Hunger Games: Catching Fire* site ([district13.co.in](http://district13.co.in)), which uses the API to create the appearance of 3D particles and interactions.

Another challenge was compressing a 3D model that held 500MB of detail down to a smaller, more manageable 3MB final file size. The overall experience is an immersive click and drag with the ability to pan, and zoom around the vehicle as well as the ability to toggle between the Battle and Pursuit modes of the

Batmobile to explore all of the key features in each mode.

Three.js also great for those fun immersive conceptual projects we all dream of being a part of that might involve particle clouds, plexus lines, data visualisation, globes or assets that can be made with primitive shapes, lines and colours, without needing 3D applications. An example of this is the Adobe Patent Innovation project ([shanemielke.com/work/adobe-patent](http://shanemielke.com/work/adobe-patent)). The project is an interactive touch

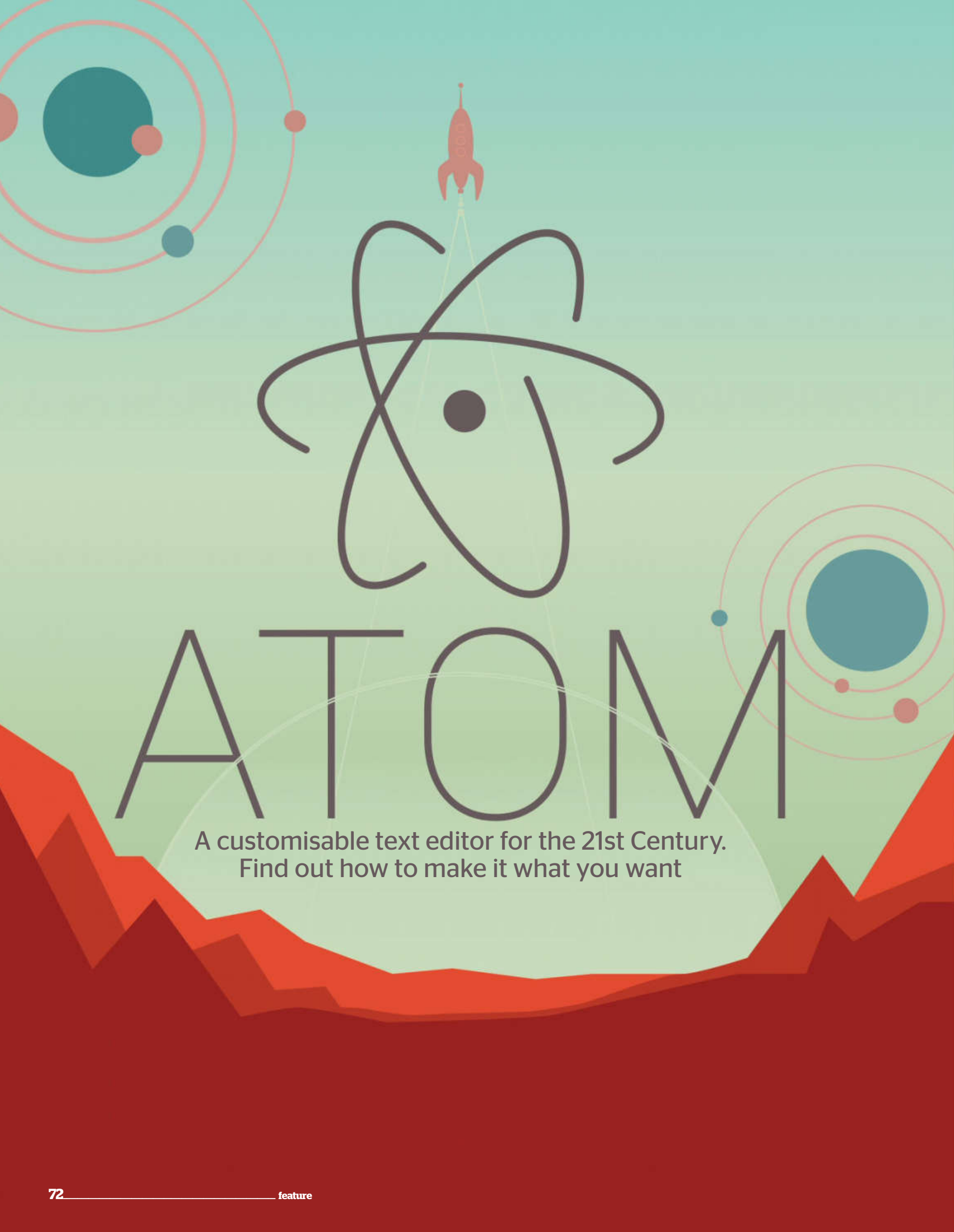
installation which enables users to explore all of Adobe's patents and inventors in 3D space. It is currently being installed in the lobby of every Adobe office worldwide and will soon exist as a website. The entire scene was created using the three.js drawing tools and lighting to create a central abstract 3D shape surrounded by a swarm of points and plexus lines. The points and lines represent all of the patents and inventors in a connected relationship in 3D space. Users

can explore and interact with all of the points in the scene as well as view the featured patents and inventors which exist on the main abstract 3D shape.

## WEBGL/CANVAS hybrid

Somewhere in the middle of three.js and pure Canvas development exists tools like Pixijs. Pixijs is primarily geared towards creating interactive 2D content. It is, however, worth noting that it will soon support 3D manipulation of 2D elements. It is a devoted rendering engine and drawing API that is blazingly fast with amazing cross-platform support for all devices. It has full WebGL support with seamless Canvas fallback so that you can author once and deploy everywhere in browser. It was patterned after ActionScript which makes it intuitive and easy to pick up (especially if you have a history developing with Flash).

When utilising WebGL, Pixi can enable you to use a huge set of existing, familiar filters such as blurs, pixelations and tints but also enables users to create their own unique filters. With a little math sand an animation package like that of GreenSock to manipulate properties, some amazingly powerful particle engines have been created. Pixijs is very popular as a game development and rendering tool, and it's also great for creating create crazy plexus animations, particle systems, emitters, mouse trails as well as for handling image sequences with 3D content.



# ATOM

A customisable text editor for the 21st Century.  
Find out how to make it what you want

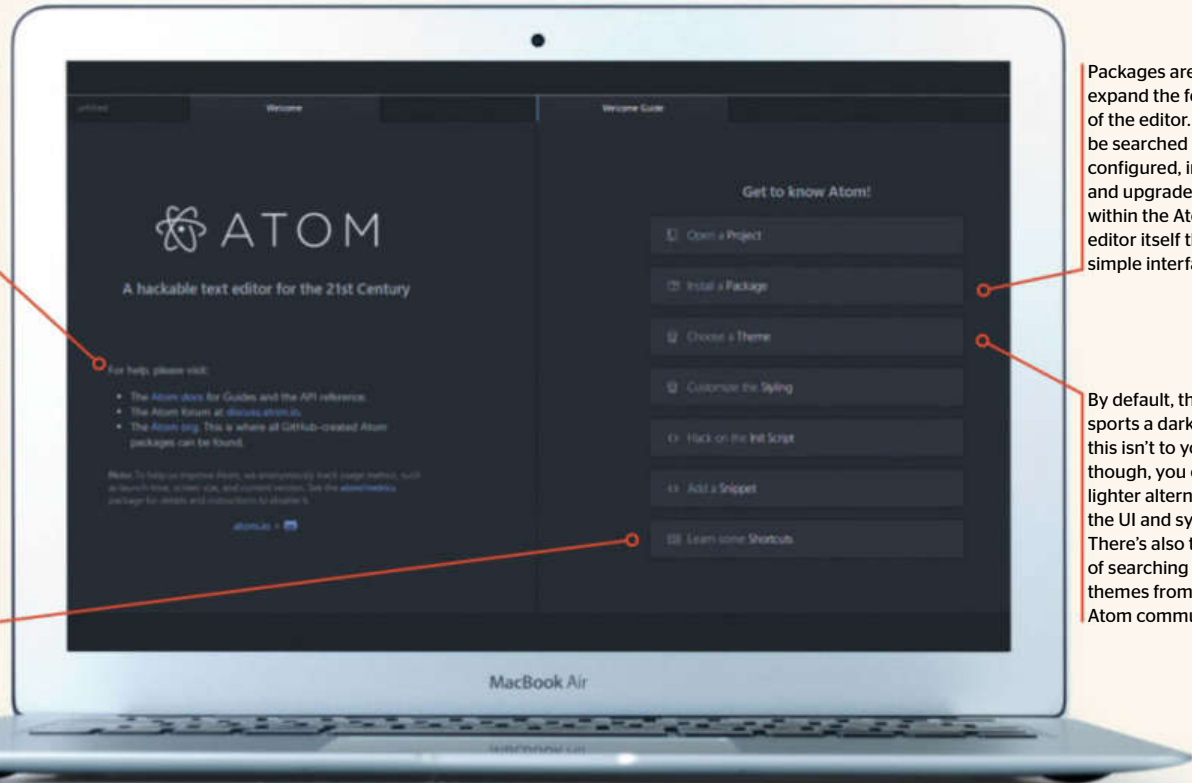


## Getting started with the Atom editor

THE DEFAULT INSTALL OF THE EDITOR PRESENTS A HOST OF HELPFUL RESOURCES

Atom is fully documented, providing an in-depth manual for normal users of the editor, to a detailed look at the editor's internals for those who wish to change the very core of the editor itself.

The core keyboard shortcut to learn for Atom is `Cmd/Ctrl+Shift+P`. It will toggle a small window called the Command Palette, which contains every Atom command available and displays their shortcut if they have one.



Packages are used to expand the feature set of the editor. They can be searched for, configured, installed and upgraded, all from within the Atom editor itself through a simple interface.

By default, the editor sports a dark theme. If this isn't to your liking though, you can select lighter alternatives for the UI and syntax. There's also the option of searching for more themes from the Atom community.

## GitHub's Atom editor, built for the web

BUILT ON THE WEB TECHNOLOGIES FOR MAKING WEB-BASED APPS

The Atom editor originally started life back in 2008, as a side project from one of GitHub's founders, Chris Wanstrath. Atom was born from his desire to create an editor that was flexible, easy to customise and built on top of web technologies. It wasn't until a few years later though, in 2011, when Atom was picked back up by GitHub and subsequently taken on as an official project, and that's when work on it really started to progress.

Work went on behind the scenes and whilst that happened, web technology in general improved to the point where it was viable to release the project publicly as a beta version in early 2014. A year and a few months later, in June 2015, version 1.0 was released.

The editor is built upon a range of familiar web technologies. At the heart of GitHub's Atom is Electron, which uses Chromium as a base (the open source core of Google's Chrome browser) and provides rendering of HTML, CSS and JavaScript as a stand-alone desktop

application. The JavaScript is much more powerful than the JavaScript that can be found in web browsers, as it takes advantage of the Node.js project to provide a powerful API for accessing the filesystem, networking and much more. This also includes the possibility of using over 170,000 (at the time of writing) modules that are provided through Node's 'npm'.

All of this effort has created a cross-platform editor, which at this point includes all of the normal features that you'd expect to find such as syntax highlighting, autocomplete, searching files, multiple view panels, multiple cursors, project support and much, much more. The appearance of the editor is very flexible as well, with the overall

look and the syntax highlighting both supporting themes, of which there are almost 800 that are already available to use. There is also support for packages, with over 2,500 available for expanding the editor in a multitude of ways.

**Markdown support**

Atom's Markdown support, enables you to create and preview Markdown-based docs. `Cmd/Ctrl+Shift+M` splits the editor view with a side-by-side of your Markdown and the HTML.



### David Boyer

Senior software developer for NHS Wales Informatics Service

"The ability to have an editor built using familiar technologies makes it possible for me to customise it to my needs. It enables me to take full advantage of the JavaScript power within the editor."



## Which languages are supported?

COMBINED WITH THE PACKAGES AVAILABLE, ATOM BECOMES A MORE COMPLETE TOOL

### JavaScript

With Atom being built on top of JavaScript, you'd expect it to be well supported. Packages such as linter and linter-jscs can add code analysis tools (linters) to catch common issues or mistakes. Turbo-javascript provides a raft of commands and snippets to make writing ES6 JavaScript quicker.

### PHP

PHP doesn't miss out on further support through packages. To complement the built-in syntax highlighting, php-cs-fixer can be installed to maintain your coding standards. For Atom's autocomplete feature, install autocomplete-php and standard PHP functions will list as you type.

### CSS

CSS gets the standard level of support from Atom with interesting packages from the community. 'Pigments' detects colour declarations and displays it as a background to the text and linter-css checks for common mistakes. Support is also available for preprocessors like Less.

### HTML

Emmet wraps a popular tool to enable writing HTML as CSS selectors, being expanded into actual HTML by simply tabbing after typing your selector. Html-entities will handle encoding and decoding of special characters, autoclose-html helps with closing your tags as you type and various linters can check the HTML correctness.

### Go

As a language developed by Google in 2007, Go has received some decent attention recently. Go-plus provides access to the powerful toolset that Go provides from within the editor: gocode to power the autocomplete, gofmt to tidy up your code, goimports to add and remove imports automatically and golint to check for common code issues and even building or testing code.

### Node.js

While Node.js uses JavaScript, which has already been detailed, there are additional packages available that provide even deeper support. For example, Node-debugger hooks into the debug support that Node has with Atom and displays the active line and allows execution control.

## How to theme Atom

ATOM'S APPEARANCE IS STYLED BY CSS AND THE COMMUNITY HAVE PRODUCED OVER 700 THEMES TO CHANGE ITS APPEARANCE

Themes in Atom are built upon the **Less.js (lesscss.org) library, which is a JavaScript-based preprocessor for CSS.** Less adds to CSS variables, mixins, functions and other syntax features that can help to make CSS more manageable.

This library has enabled the Atom community to build up a large amount of themes which you can

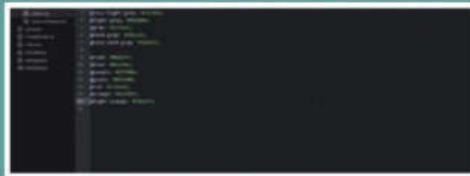
easily install and configure, all from within the Atom editor itself.

These themes can come in two different types, syntax and UI but they're pretty straightforward. Syntax themes are focused on the area that is displaying your code (or other file types) whereas UI themes are focused on altering the appearance of the whole editor interface.

*“Less adds to CSS variables, mixins, functions and other syntax features that can help to make CSS more manageable”*

## How to create a syntax theme

FOUR SIMPLE STEPS TO DISPLAYING CODE



### 1. Theme package files

Atom provides a built-in method for generating the initial files required. These can be generated with Packages>Package Generator>Generate Package Syntax Theme. Enter a path and generate the files.

### 2. Dev Mode Atom

It'd be useful to see theme changes when saving a file. To do this set Atom to use your theme with File>Settings>Themes>Syntax Theme and open the theme folder via View>Developer>Open in Dev Mode.

## A bigger, better Atom

ATOM IS A VERY EXTENSIBLE EDITOR THANKS TO PACKAGES

With the package count for Atom exceeding 2,500, there is no shortage of interesting additions you can add to your editor.

### Package installation

Under the menu File>Settings, you'll find a Packages item. This provides a list of all the packages you have installed and ones that were included with Atom by default (core packages). Here you can access any settings a package may have or disable/uninstall them. For installation, proceed to the Install section which provides a search input box.

Type the name of the package you wish to install or keywords for something you would like to do. You'll then be presented with a list providing a description, download count, version, link to the webpage of that package and an installation button.

### Customising shortcuts

You can view keyboard shortcuts via File>Settings>Keybindings. This will display a searchable list and also provide a link to the file in which you can define your own.

### Access the packages

While this primarily depends upon the way the package was written to work, there are a few places that a package will present itself. The menu at the top of the Atom editor contains a Packages item that packages can provide actions under. They will also

## Discovering

**Finding an Atom theme is easy.** All you have to do is simply proceed to the Atom theme site (by going to [atom.io/themes](http://atom.io/themes)) and you'll be presented with a directory of published themes. This collection includes some which have been selected to be featured, the newest, most recently updated and lists of those which have trended (by popularity) for the previous day, week or month. As mentioned previously, a theme will be either for the UI or the editor syntax. Some themes can be more playful, like one inspired by Batman or you can have a more serious Material Design-based theme.

## Installing

Once you've found a theme to your liking, simply go back to your Atom editor and access

**File>Settings>Install from the menu.** Here you can enter the name of the theme that you wish to install, being sure to select Theme instead of Packages, or search for other themes. Simply click the install button and Atom will retrieve it.

## Selecting

Within the **File>Settings>Themes** menu, you'll find two drop-down lists of UI themes and syntax themes that you have installed, with the currently used ones selected for you. Selecting another theme will apply it to the editor and some themes also allow customisation, presenting a cog item for you to access their settings.

The menu can also provide a list of themes that you have already installed, with the ability to remove them if desired.

## Chromium developer tools

You can take a peak under the hood of Atom by using **Opt/ Alt+Ctrl+I** or **View>Developer>Toggle Developer Tools** to explore the HTML and access JavaScript.

```
.variable {
  color: lighten(green, 20%);
  text-decoration: underline;
  border: 1px solid green;
  padding: 2px;
}
```

## 3. Less CSS

A form of CSS known as Less is used by Atom, which can also accept normal CSS as well as providing us with some very useful additions. Three of the core Less files for your theme are contained within the 'styles' subdirectory. So now, let's change how variables are styled by opening up base.less and finding .variable.

```
cd ~/github/my-theme-syntax
apm publish minor
```

## 4. Share the theme

Once you're happy with the syntax theme that you've created, you may decide that it's worth sharing it with others online so that more people can reap the benefits. A command-line tool, provided by Atom, called apm, is used for this very purpose. Before you share though, you should know that it's important to make sure that the information contained in the package.json file is correct, so do make sure that you read through the [documentation at atom.io/docs/latest/publishing-a-package](http://atom.io/docs/latest/publishing-a-package) first before going on to share the themes with others.

usually add themselves to the Command Palette, so just use **Cmd/Ctrl+Shift+P** to bring up the palette and then type the name of the package to filter the list and display the commands for it.

Finally, keyboard shortcuts are usually created, but these will be unique to each package and best found by reading the documentation for it.

## Discovering packages

Going back to the Install area for packages within Atom, you should see an area listed for Featured Packages. This is a list featuring some of the favourite packages from the Atom community. If you check out the Atom website ([atom.io/packages](http://atom.io/packages)) you will find lists of packages that have been trending over the past day, week and month. This is a fantastic place to find out which packages are suddenly becoming popular with other developers.

Finally, the Atom website also has a blog which contains posts doing a new package roundup. They

pick several new packages that have interesting features and showcase them with fuller descriptions and screenshots.

## Package performance

If Atom is starting to feel sluggish or takes a long time to open, it's worth considering the packages that you have installed recently.

A package that Atom includes by default is called Timecop and accessed via the Packages menu. It displays the loading and activation time of each installed package.



## Atom Editor

@AtomEditor

The Twitter account of the Atom editor. Allows you to keep up to date on each release, blog post and highlights useful packages.

## Working with Grunt

### USING A PACKAGE TO TAKE CONTROL OF GRUNT TASKS

Grunt is a very useful tool for configuring sets of tasks that assist with the work you're doing with your application. Through the use of a configuration file (Gruntfile.js) and various Grunt plugins you can perform a variety of tasks: optimising images, checking code quality, running a server, filesystem actions (copy, move), converting ES6 JavaScript to ES5 and much more.

If you're new to Grunt, their website has a great tutorial that shows you how to set up an example Gruntfile ([gruntjs.com/getting-started](http://gruntjs.com/getting-started)). After running through this you'll have some tasks available for Atom.

Through installing the grunt-runner package into Atom, you can now gain access to an in-editor UI for controlling your Grunt tasks. Using the Command Palette (**Cmd/Ctrl+Shift+P**) you can bring up the UI by typing 'grunt panel', which then provides you with a button for firing off grunt tasks. When you do click the start button, grunt-runner will display a list of tasks that is found within your Gruntfile, and this will enable you to either type the name, click to select or navigate by using the arrow keys. It then fires off the tasks and logs the output to the UI, providing feedback as to the tasks being executed.

## Check your code

### USE LINTING TO AVOID BUGS OR BAD PRACTICES

Having your code checked as you type can save a lot of time that would be lost to common mistakes. Atom has a package called linter that provides that base package for checking a range of languages.

Linter-jshint uses the JSHint project to perform an analysis of your code. JSHint will highlight syntax mistakes that would prevent your code from executing and highlight suspicious usage of JavaScript that are bad practice and even basic code styling. These checks are all configurable and once installed are highlighted and listed at the bottom.

Another package to complement JSHint is linter-jscs. JSCS concerns itself with the style of JavaScript code, helping to ensure that you code consistently. Companies like Google and Airbnb have produced JavaScript style guides which JSCS can help enforce.

## 5 Must-have extensions

### MAKE ATOM AN EVEN BETTER CODE EDITOR

#### Minimap

[atom.io/packages/minimap](http://atom.io/packages/minimap)

Adds a thin additional column to the editor window that provides a preview of the full file contents. This can then make it easier to scroll to specific code.

#### Git-plus

[atom.io/packages/git-plus](http://atom.io/packages/git-plus)

Source control is important and this package provides access to Git for that purpose, all from within Atom so you don't have to leave the editor.

#### File-icons

[atom.io/packages/file-icons](http://atom.io/packages/file-icons)

Improves the filetree view and other areas within Atom by assigning colourful icons to different file types, making it easier to see the type at a glance.

#### Merge-conflicts

[atom.io/packages/merge-conflicts](http://atom.io/packages/merge-conflicts)

When merging branches in Git, conflicts can occur with the changes. This package provides an in-editor: a simpler way to resolve those conflicts.

#### iMDone

[atom.io/packages/imdone-atom](http://atom.io/packages/imdone-atom)

Looks throughout your project's code for comments marked TODO, FIXME and others. It then takes this information and provides a kanban-style board.

## Beautify code

### CLEAN UP CODE MESS

Sometimes code you encounter may not be in a very readable state, either through the way it was written or having been put through a minimisation process to reduce file size. This is where atom-beautify comes into play, while it won't reverse any obfuscation, it will work its way through the code and insert new lines, spaces and indentation to try and make every line readable again. You can do this through either the Packages>Atom-Beautify menu, using Cmd/Ctrl+Alt+B or calling up the Command Palette through Cmd/Ctrl+Shift+P and typing 'Beautify'.

## Create your own package

### A PACKAGE TO POST HIGHLIGHT CODE FOR SHARING ON GITHUB

Customisation is at the heart of Atom and as we've already detailed, there are plenty of packages available to extend the features of Atom. These packages are written using a well-documented API which can control the editor's various aspects.

#### The package generator

With Atom's package generator, used earlier to create a syntax theme, we can create the base files needed for a normal package. Select Packages>Package Generator>Generate Atom Package and enter a location for the files. They're written in CoffeeScript, but plain JavaScript can be used.

#### Dependencies

Within the package.json alter the activationCommands, which tells Atom how to execute our package and the dependencies that include a module we'll require.

```
"activationCommands": {
  "atom-workspace": "my-package:create"
},
"dependencies": {
  "request": "^2.6.0"
}
```

#### Menus and shortcuts

Our new package will be accessed by right-clicking in the editor and through a keyboard shortcut. These are set within the following files:

```
// keymaps/my-package.json
{"atom-workspace": {"ctrl-alt-o": "my-package:create"}}
// menus/my-package.json
{"context-menu": {
  "atom-text-editor": [{
    "label": "Create Gist",
    "command": "my-package:create"
  }]
}]
```

#### Initialise

Within lib/my-package.js we can initialise the package. Request will be used within our package and shell is part of Atom that we will use to open a link in the browser. Then register our command with Atom.

```
var request = require('request');
var shell = require('shell');
var activate = function() {
  atom.commands.add('atom-workspace', {
    'my-package:create': function() {
      create();
    }
  });
};
```

#### Gist

Now our main code, which grabs the selected text in the editor window, submits to GitHub as a Gist and opens posted code in your browser.

```
var create = function() {
  var editor = atom.workspace.
    getActivePaneItem();
  var selection = editor.getLastSelection();
  var options = {
    url: 'https://api.github.com/gists',
    headers: {
      Accept: 'application/vnd.github.v3+json',
      'User-Agent': 'Atom Package Gister',
    },
    json: true,
    body: {public: true, files: {}},
  };
  options.body.files[editor.getTitle()] = {
    content: selection.getText(),
  };
  return request.post(options, function(err,
    resp, body) {
    shell.openExternal(body.html_url);
  });
};
module.exports = {activate: activate, create:
  create};
```

### Contribute to packages

It's worth checking if a package exists through [atom.io/packages](http://atom.io/packages). You may be able to contribute any changes you require, if the author is willing to accept them.

## Git and Atom

### USING GIT-BASED SOURCE CONTROL

Since GitHub is behind the Atom editor, you'd expect it to support Git in some way. By default, Atom provides a useful insight into changes you're making to a file when compared to what Git has recorded. Along the side of the editor window, lines in the file will be highlighted green if they are completely new lines or yellow if considered a modification of a line. Via the

Command Palette or Packages>Git Diff, you can access a list of these modifications and jump between them.

If you're hosting your code on GitHub, the built-in 'Open on GitHub' package will provide many useful shortcuts. The Atom community has also put together packages like Git-Plus - useful for providing access to certain Git commands from within Atom, avoiding the need to switch to a terminal to commit changes. Merge-conflicts provides a UI within the editor to deal with conflicting changes straightforwardly when merging code branches in Git.



# FOR THE GNU GENERATION

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

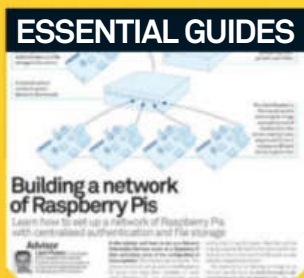


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# Get robust JavaScript code with the TypeScript library

Structure your JS code more rigidly than ever before with the help of Microsoft's TypeScript





JavaScript's liberal syntax declaration lets developers do all kinds of weird and wonderful things. Programmers who grew up on more restrictive class-based systems tend to need some time to acquaint themselves to the new working environment.

Google engineer Addy Osmani collected design patterns which helps this process - when, and only when, applied correctly. Duck typing is even worse though: it permits the creation of bugs which occur only when the code path in question is executed. Murphy's law then ensures that this will happen on the computer of an important client. TypeScript solves these problems by creating a statically typed dialect of JavaScript which is verified via a more stringent execution environment. Transgressions are punished mercilessly, defective code never makes it to the browser.

Microsoft does its magic via a process called transpilation. A special compiler transforms the TypeScript code to vanilla JavaScript, which can then be run in a JavaScript VM of choice. State-of-the-art JavaScript runtimes are so fast that they can be used as execution environment for arbitrary code - some developers even go as far as to transpile C++ to a JavaScript-based VM.

## 1. Install Visual Studio

Even though TypeScript can also be run from the command line, we will use Microsoft's free version of Visual Studio 2015. Download it by visiting [visualstudio.com/en-us/products/visual-studio-community-vs.aspx](http://visualstudio.com/en-us/products/visual-studio-community-vs.aspx) and install it like any other application.

## 2. Create a project

Click New Project in order to open the new project wizard. Then proceed to opening the TypeScript tab,

where a new solution based on the HTML application with TypeScript template is to be created. It will contain an HTML file and an accompanying TS file containing the actual TypeScript code.

## 3. Wire a button

The following steps will demonstrate various features of the runtime via an ever-expanding method. It must be triggered from a button - open the HTML file and append the markup shown in the source code accompanying this step. Then, replace the window.onload block in the TS file with the function specified.

```
<body>
<h1>TypeScript HTML App</h1>
<button onclick="btnClicked()">Button
clicked</button>
</body>
//snip
function btnClicked()
{
  alert("Hello TS");
}
```

## 4. A question of typing

TypeScript takes its name from its typing capabilities. The snippet accompanying this step shows a few variable declarations. Be aware that variables don't necessarily need to have a type - if any is specified, the variable in question will not be subject to input validation.

```
function btnClicked()
{
  var myString: String;
  var myNumber: Number;
  var myBool: Boolean;
  var myAny: any;
}
```

## 5. Validation

TypeScript's capabilities can be validated by assigning invalid elements to the variables created in the previous step. Visual Studio will flag them down the moment the file has been saved. It will, furthermore, prevent deployment until any and all objectionable passages have been remedied.

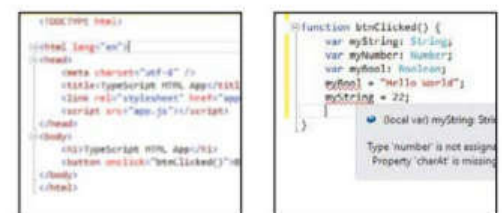
## 6. Create an enum

If variables are to contain but a few predefined values, using an enum is the way to go. The snippet accompanying this step demonstrates the definition of an enum handling aircraft types. After that, a new instance of the enum is created and a value is assigned in order to demonstrate its handling.

```
enum Aircraft {
  MIG21,
  MIG25,
  MIG29,
  MIG31
}
function btnClicked()
{
  var plane: Aircraft;
  plane = Aircraft.MIG25;
}
```

## Vetoing Microsoft

Developers labouring a distaste for Visual Studio can use a Node-based transpiler to transform their TypeScript code into JavaScript. Sadly, doing so means missing out on various comfort features.



**Left**  
Visual Studio Community combines the formerly separate web, Windows RT and desktop versions of Microsoft's popular IDE

**Top left**  
TypeScript code resides in TS files. Visual Studio transforms them into temporary JavaScript during the deployment of the web app

**Top right**  
The transpilation process mercilessly weeds out all kinds of errors which traditional JavaScript developers can find only at runtime



## Developer tutorials

# Get robust JavaScript code with the TypeScript library

### 7. Create a class

Next up, we'll work on real classes. Remove the declaration of the greeter class, and then replace it with the following bit of code. Our AircraftManager class contains a member variable, a member function and a constructor which is used to set its value during the initialisation of the object instance.

```
class AircraftManager {
  myWhatAmI: Aircraft;
  constructor(aWhat:Aircraft) {
    this.myWhatAmI=aWhat;
  }
  sayHello() {
    alert("Hello");
  }
}
```

### 8. Spawn an instance

The process of spawning an instance is as easy as invoking the new operator on the class name, which can furthermore be used as a variable type. By and large, any objects that are spawned from TypeScript classes behave just like normal JavaScript objects - accessing their members and member functions via the . operator is a non-brainer.

```
function btnClicked()
{
```

```
  var planeManager: AircraftManager;
  planeManager = new AircraftManager(Aircraft.
  MIG21);
  planeManager.sayHello();
}
```

### 9. Hide a member

TypeScript treats all members of a class as public by default. This behaviour can be modified by making use of the private keyword. This keyword can be appended to both member functions and variables - in both cases, external access is no longer permitted by the transpiler.

```
class AircraftManager {
  private myWhatAmI: Aircraft;
  constructor(aWhat:Aircraft) {
    this.myWhatAmI=aWhat;
  }
  private sayHello() {
    alert("Hello");
  }
}
```

### 10. Yield results

TypeScript's zealous quality control algorithms, of course, can also make amends for all kinds of class-related oddness. We can try this out with two methods: by attempting to invoke the constructor with a wrongly typed parameter or via an access attempt addressed at a private variable.

### 11. Check values

Accessors are among some of the oldest structuring aides known to programmers. Our snippet that can be seen below demonstrates the adding of a property which checks the values passed into it before committing them to the data store found inside the class.

The getter could, in theory, also be expanded to modify the values returned.

```
class AircraftManager {
  private _whatAmI: Aircraft;
  get myWhatAmI(): string
  {
    return "An Aircraft";
  }
  set myWhatAmI(what: string)
  {
    if (what == "MIG21")
    {
      this._whatAmI = Aircraft.MIG21;
    }
  }
}
```

### 12. Function cut short

Typing time is one of the most important 'time wasters' that can be encountered during software development. TypeScript permits you to set sensible defaults for parameters, which can then be invoked with a shorter parameter list. Please be aware though that all non-optional parameters will need to be in front of the optional ones.

```
class AircraftManager {
  private _whatAmI: Aircraft;
  . . .
  constructor(aWhat: Aircraft = Aircraft.
  MIG21) {
    this._whatAmI=aWhat;
  }
  . . .
```

### 13. Creation of parameters

Functions with a variable number of parameters can be extraordinarily helpful at solving some rarely

## The playground

Individuals adverse to both Visual Studio and Node.js can visit the TypeScript Playground ([typescriptlang.org/Playground](https://www.typescriptlang.org/Playground)). It provides a hosted version of the TypeScript transpiler.



#### Top left

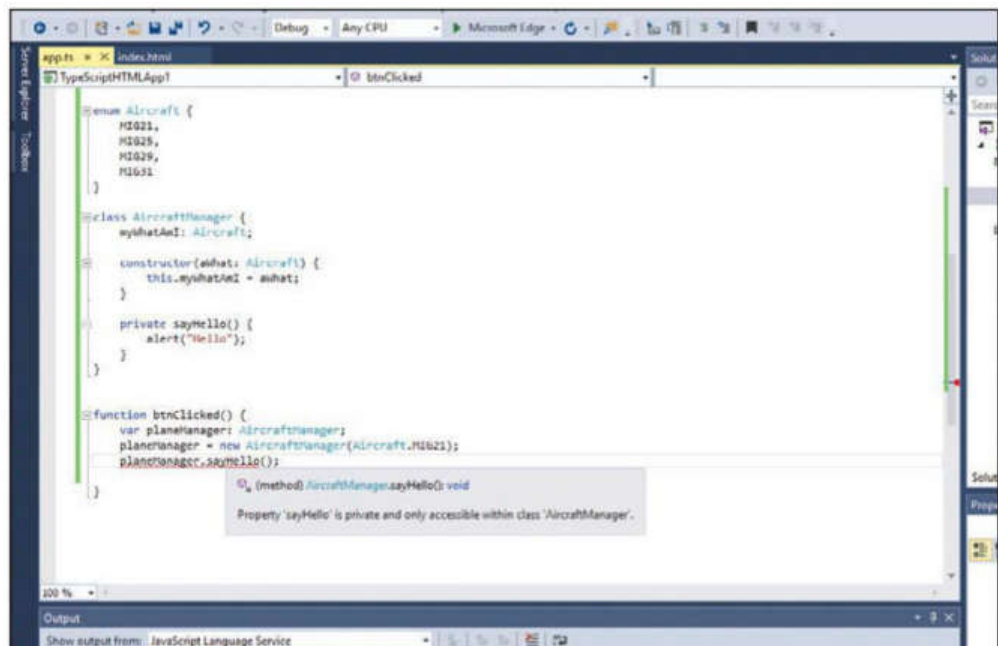
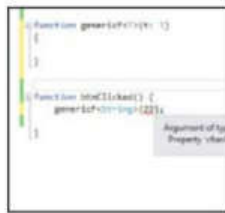
Thanks to inheritance, the BetterManager can easily change the message that is displayed in its instance's sayHello() function

#### Top right

Invoking a generic function with an invalid parameter is punished with yet another transpiler warning

#### Right

Using the private keyword permits developers to hide implementation details from pesky callers that want to wreak havoc in their code



Type	Contains what
<b>Any</b>	Accepts any JavaScript variable, thereby disabling TypeScript type checking
<b>Array</b>	An Array of elements
<b>Boolean</b>	True or False
<b>Enum</b>	An enumeration of numeric values, addressable via their assigned names
<b>Number</b>	A numeric value
<b>String</b>	Text
<b>Void</b>	Designates that a method returns nothing, and thus can not stand on the right side of an =

### To type where no one typed before

The picture accompanying this step provides a rough overview of the types found in TypeScript. Developers experienced with Java or C will note the lack of specific numeric types: this is due to the reliance on the common JavaScript interpretation core. It cannot keep integers and floats apart, the weakness propagates to TypeScript at runtime. Strings share a similar fate - they are but a bit of syntactic sugar attached to a normal JavaScript var.

Void is interesting from a psychological standpoint: it informs the compiler that the element at hand will return nothing. This bit of metadata is helpful as it ensures that such methods never find themselves on the right-hand sign of an equals operator.

encountered problems. TypeScript provides a facility which makes the creation of variable-parameter functions really easy - all you have to do is take a look at the code accompanying this step below.

```
{
  return first + " " + rest.join(" ");
}
```

### 14. Shared static elements

Static elements are shared between all instances of a class: although this commonly maligned pattern could potentially lead to some brittle code if it is overused. However, static elements can also be really helpful when it is actually applied correctly. TypeScript delights its users with the presence of a static keyword, and this behaves as expected:

```
class AircraftManager
{
  . . .
  static sayHello() {
    alert("Hello");
  }
  function btnClicked()
  {
    AircraftManager.sayHello();
  }
}
```

### 15. Inheritance

Making classes inherit from one another simplifies the modelling of real-world relationships. Derived classes can, furthermore, overwrite the behaviour of their hosts - for

example, the BetterManager replaces the message that is shown by the normal sayHello() function if invoked,

```
class AircraftManager {
  . . .
  sayHello() {
    alert("Hello");
  }
}
class BetterManager extends AircraftManager
{
  sayHello()
  {
    super.sayHello();
    alert("Greetings from the better Manager!");
  }
  function btnClicked()
  {
    var aManager: BetterManager;
    aManager = new BetterManager();
    aManager.sayHello();
  }
}
```

### 16. Access mother object

TypeScript does not hide the mother object instance from view. It can, instead, be accessed via the super keyword. Our snippet below demonstrates the usage of super in a constructor and in a member function - it could not be easier.

```
class BetterManager extends AircraftManager
{
  sayHello()
```

```
{
  super.sayHello();
  alert("Greetings from the better Manager!");
}
}
```

### 17. Enforce presence via interfaces

JavaScript's duck typing is a never-ending source of pain and this is because everything is valid for everything, that is until a NullPointerException occurs though. Using an interface enables developers to specify the presence of member variables and/or functions - and any elements that are not conforming are therefore not allowed to pass.

```
interface AnObject
{
  myName: String;
  myNumber: Number;
}
function worker(a: AnObject) { }
function btnClicked()
{
  var anObject = { myName: "AnElement",
    myNumber: 22 };
  worker(anObject);
}
```

### 18. Make parts optional

An old adage states that exceptions can prove the validity of rules. Interfaces can be configured to contain optional members and of course these don't necessarily need to be implemented. This feature, unfortunately, is

## Developer tutorials

# Get robust JavaScript code with the TypeScript library

not particularly helpful for us and that's because crashes can occur if the callee forgets to check the presence of the implementation.

```
interface AnObject
{
  myName: String;
  myNumber?: Number;
}
function worker(a: AnObject) { }
function btnClicked()
{
  var anObject = { myName: "AnElement"};
  worker(anObject);
}
```

## 19. Implement interfaces

Classes can be designated as implementations of particular interfaces. This is accomplished thanks to use of the implements keyword: if 'implements' is present and the class misses declarations that are required in the interface then what happens is that a compiler error will be raised in order to notify the developer about his unforgivable omission.

```
interface AnObject {
  myName: String;
  myNumber?: Number;
}
class SomeClass implements AnObject
{
  myName: String;
  myNumber: Number;
}
```

## 20. Modularise

The TypeScript transpiler does not merge the individual parts of a library into one file - instead, each TS file gets transformed into an individual JS file. Do be aware

though that each JS file must be included into the website separately in order to be able to use the module's content.

## 21. Go generic

Developers can side-step the type-checking process and all they have to do to do this is make use of the Any keyword. The use of generics provide a safer way to creating type-agnostic classes and/or functions: the parameter informs the compiler about the type that is going to be used by a particular instance, and this can then be enforced with zealotism.

```
function genericF<T>(myVal: T)
{
  return myVal;
}
function btnClicked()
{
  genericF<Number>(22);
  genericF<String>(22);
}
```

## 22. Mixin on the loose

Keep in mind that creating complex inheritance structures is not always the best solution. Mixins are 'building block classes' which provide a small set of functionality, and these mixins can then be integrated into larger classes. As an example, let us take a bit of code from the documentation which creates activity management logic.

```
class Activatable {
  isActive: boolean;
  activate() {
    this.isActive = true;
  }
  deactivate() {
    this.isActive = false;
  }
}
```

```
}
}
```

## 23. Use applyMixing

Mixins are instantiated via the implements keyword. The host class must contain a stub implementation, and this is then overwritten at runtime by making use of the applyMixing method.

```
class SmartObject implements Disposable,
  Activatable {
  . . .
  // Activatable
  isActive: boolean = false;
  activate: () => void;
  deactivate: () => void;
}
applyMixins(SmartObject, [Disposable,
  Activatable])
var smartObj = new SmartObject();
setTimeout(() => smartObj.interact(), 1000);
```

## 24. Mix it up

The actual deployment of the mixin must be done at runtime via the function shown in the code snippet shown below. Due to the complexity of the mixins, it's important for you to consult documentation before proceeding further.

```
function applyMixins(derivedCtor: any,
  baseCtors: any[]) {
  baseCtors.forEach(baseCtor => {
    Object.getOwnPropertyNames(baseCtor.
      prototype).forEach(name => {
      derivedCtor.prototype[name] = baseCtor.
        prototype[name];
    })
  });
}
```

### Learn more about TypeScript

Even though TypeScript is not particularly complex, it cannot be covered in five pages worth of tutorial. Developers interested in finding out more about their working environment should visit the TypeScript tutorial found at [typescriptlang.org/Handbook](https://typescriptlang.org/Handbook).

Microsoft's endorsement is helpful in that it ensures the presence of a lively and active community: many if not most questions can be answered via Google. Newbies and professionals facing doubts should visit StackOverflow in order to find help and consultation from their peers.

The screenshot shows the TypeScript website with a navigation bar containing links for 'learn', 'play', 'download', and 'interact', and a secondary row for 'tutorial', 'handbook', 'samples', and 'language spec'. A sidebar on the left lists various topics: Basic Types, Interfaces, Classes, Modules, Functions, Generics, Common Errors, Mixins, Declaration Merging, Type Inference, Type Compatibility, and Writing .d.ts files. The main content area is titled 'Basic Types' and includes a brief introduction and examples for 'Boolean' and 'Number' types.



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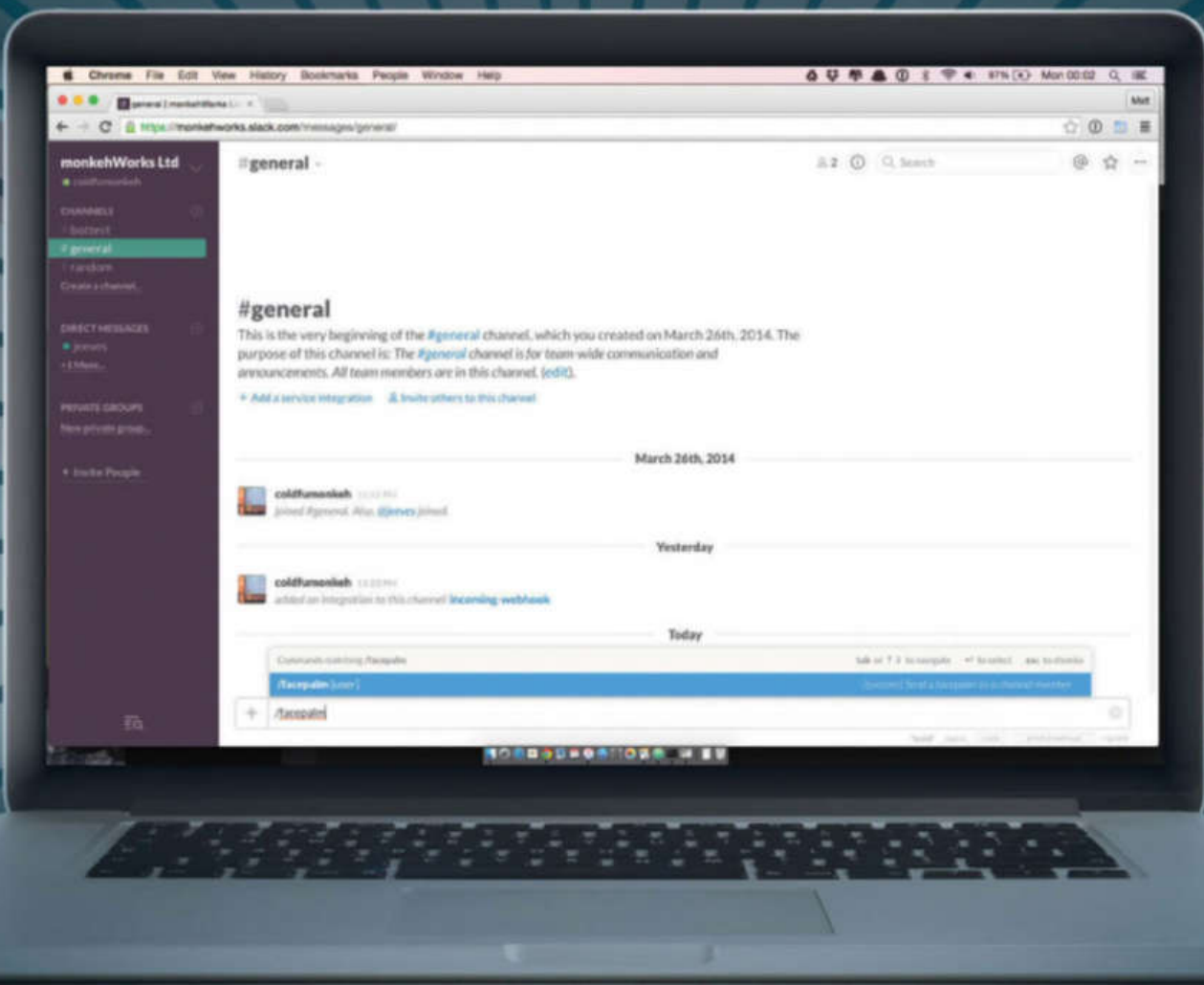
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# Build a friendly bot to enhance your Slack group

Create a custom bot using Node.js to interact with your Slack group and help automate processes



**Team collaboration is a big part of the development world now, especially as more of us work remotely.** If you work on your own remotely it's very important to be able to still chat, share code and ask for help from a community. Couple these requirements with the benefit of being able to control, in some way, your development processes and you have Slack, the real-time messaging system that you can build upon.

In this tutorial we will see how we can extend the Slack features and functions by creating a custom automated bot, written in Node.js and open source plugins and packages. We will interact directly with the bot to create custom commands. We'll also intercept and manage incoming data from the Slack servers and services based upon transaction type. We will create an HTTP server in Node.js that will work with the bot and Slack's custom Slash Command features to run specific tasks and receive input from an incoming Webhook feature.

With the highly configurable tools and services available to integrate by default, as well as those available to enable and develop upon like our bot, Slack is an emerging dynamic way for developers, teams and communities to share, chat and collaborate.

## 1. Configure slack integration

Sign up to Slack to get your free channel. Head to the Integration page ([yourteamname.slack.com/services/new](https://yourteamname.slack.com/services/new)) from the menu and scroll to the bottom to see the Bot option. Enter your chosen bot name and details and copy the API token value you are given.

## 2. Create Node configuration

To start the project off, you will need to create your Node package.json file. You can use the command-line wizard to do this. Now navigate to the desired directory location

for your project and run the npm init command. You are then able to select the default values for most of the options here.

```
npm init
```

## 3. Install dependencies

Use your command line to install the required Node packages and dependencies, adding the --save flag to automatically save them to the package.json file. The slackbotapi will form the basis for our project as the wrapper to the Slack API.

```
npm install slackbotapi async lodash request walk is-up express body-parser node-slackr --save
```

## 4. Autorun function

Create index.js in the root of your project. This will contain, primarily, the Immediately Invoked Function Expression (IIFE) to autoexecute on startup. Provide your bot name and bot token values and then define a reference to slackBot, a return object from a new function, initSlackBot.

```
(function bootstrap() {
  'use strict';
  var botName = 'jeeves';
  var botToken = 'YOUR_BOT_TOKEN';
  var slackBot = initSlackBot(botToken);
  // code to go here
})();
```

## 5. Initiate the bot

Create the initSlackBot function inside the IIFE. This accepts the bot token as the parameter and then makes use of it to instantiate a new Slack API connection. It is this connection value that we send back from the function. We will then reference as slackBot throughout the application.

```
function initSlackBot(botToken) {
  var slackAPI = require('slackbotapi');
  var slack = new slackAPI({
    'token': botToken,
    'logging': true
  });
  return slack;
};
```

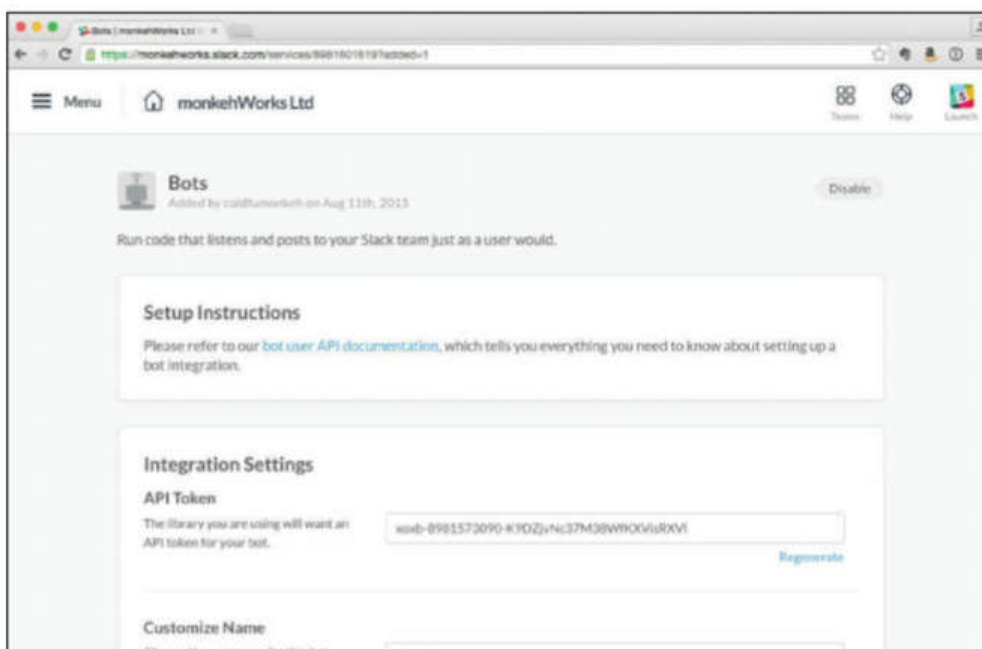
## 6. Detect changes

The bot will work on detecting particular events and reacting accordingly to these events. Now we will create a function that will output a response when a user (and not the bot itself) joins or leaves the Slack group. We can make use of an internal function, getUser, to retrieve the user details from a provided ID value.

```
slackBot.on('presence_change', function(data) {
  console.log(data);
  var user = slackBot.getUser(data.user);
  console.log('presence_change detected');
  if (user.name !== botName) {
    if (data.presence === 'active') {
      console.log(user.name + ' has joined.');
```

## Customise settings

You can customise your bot and have it send a random response from a list defined by you for any message it receives. Check the settings page for more options on how to do this without coding.



### Left

Configure your bot and give it some personality with a name and avatar, should you wish, from the options page when setting it up

### Top left

The application will log to the console when a user leaves or joins the Slack application, pulled from detecting a presence change event

### Top right

The bot detects the character command in the channel to run the isup request and then responds with information for the user



## Developer tutorials

# Build a friendly bot to enhance your Slack group

## 7. Plugin management

To pre-empt our bot's functions growing and making our single file harder to manage, we'll create a function that will load in all JavaScript files within a plugins directory. This will enable us to group all of the plugins in specific files for ease of maintenance and separation.

```
slack.loadBotPlugins = function
loadBotPlugins() {
  var plugins = [];
  var walk = require('walk');
  var walker = walk.walk('./plugins', {
    followLinks: false });
  // more here
};
slack.use = function use( plugin ){
  plugin( slackBot );
};
```

## 8. Load plugin files

Inside the plugin loader we can call the walker object to check each file and load every one with a JS extension. It will require that file directly for use and also add it to an array that we'll use in the end event to display all of our loaded plugins.

```
walker.on('file', function(root, stat, next)
{
  if ( stat.name.slice(-3) === '.js' ){
    console.log('loading plugin %s/%s', root,
```

```
stat.name);
  try {
    slackBot.use( require( root + '/' + stat.
      name ) );
    plugins.push( root + '/' + stat.name );
  }catch (err){
    console.error( err );
  }
  next();
});
walker.on('end', function(){
  console.log('plugins loaded: %s', plugins);
});
```

## 9. The first plugin

Now we will create a new file in the plugins directory called 'isup.js'. This will call the [isup.org](https://isup.org) API for any given URL that we pass the bot. Now we will require the events module as we'll use the emitter to detect requests. Inside the module we will need a blank bot variable as well as loading in the is-up package.

```
'use strict';
var events = require('events');
var emit = new events.EventEmitter();
module.exports = (function(){
  var bot;
  var isup = require('is-up');
  // more here
})();
```

## 10. Emit on <Action>

Our module will detect a character in a posted message and then run a function. In order for us to manage the event transmission we will need to request an event emit to run that function for when an event called

isUpRequest has been fired. What we will do next is define how that event is fired.

```
emit.on('isUpRequest', function(data) {
  isUpRequest(data);
});
```

## 11. Make the request

When the event is emitted it will run the following function and send in the data from the message. Here we strip back the URL from the message text and if it's a reasonable size, send it to the isup method. The bot will post back to the channel with a response for the user using the sendMsg function.

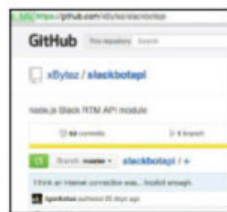
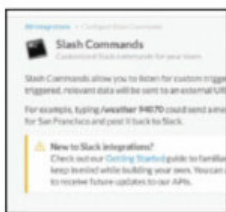
```
function isUpRequest(data) {
  var url = data.text.split('');
  url.shift();
  url = url.join('').toLowerCase();
  url = url.replace('https://', '');
  url = url.replace('http://', '');
  url = url.split('|');
  if ( url.length > 1 ) {
    url = url[1].substr(0, url[1].length - 1);
    isup(url, function(err, up){
      bot.sendMsg(data.channel, url + ' is ' +
        (up ? 'up' : 'down') + ' for me' + (up ?
          '...' : ' too.'));
    });
  } else {
    bot.sendMsg(data.channel, 'Did you send me
    a real URL? I couldnt match it.' );
  }
};
```

## 12. Module init and detection

The return from the plugin module initialises the entire thing. Passing in the Slack reference we can detect an

## Running an IRC bot?

If you're running an IRC bot built in Node then you won't be alone). Transferring that code to work with the Slack API is incredibly simple and very few changes would need to be made.



### Top left

Configure a new Slash Command for your group and specific channels with custom command options to call reliable services or remote APIs

### Top right

For another example of setting up the slackbot package check out the official GitHub repository here: [github.com/xBytez/slackbotapi](https://github.com/xBytez/slackbotapi)

### Right

Generating an incoming Webhook URL for your application will enable you to send data via HTTP directly into Slack for custom commands

### Integration Settings

**Post to Channel**  
Messages that are sent to the incoming webhook will be posted here.

[or create a new channel](#)

---

**Webhook URL**  
Send your JSON payloads to this URL.

[Copy URL • Regenerate](#)

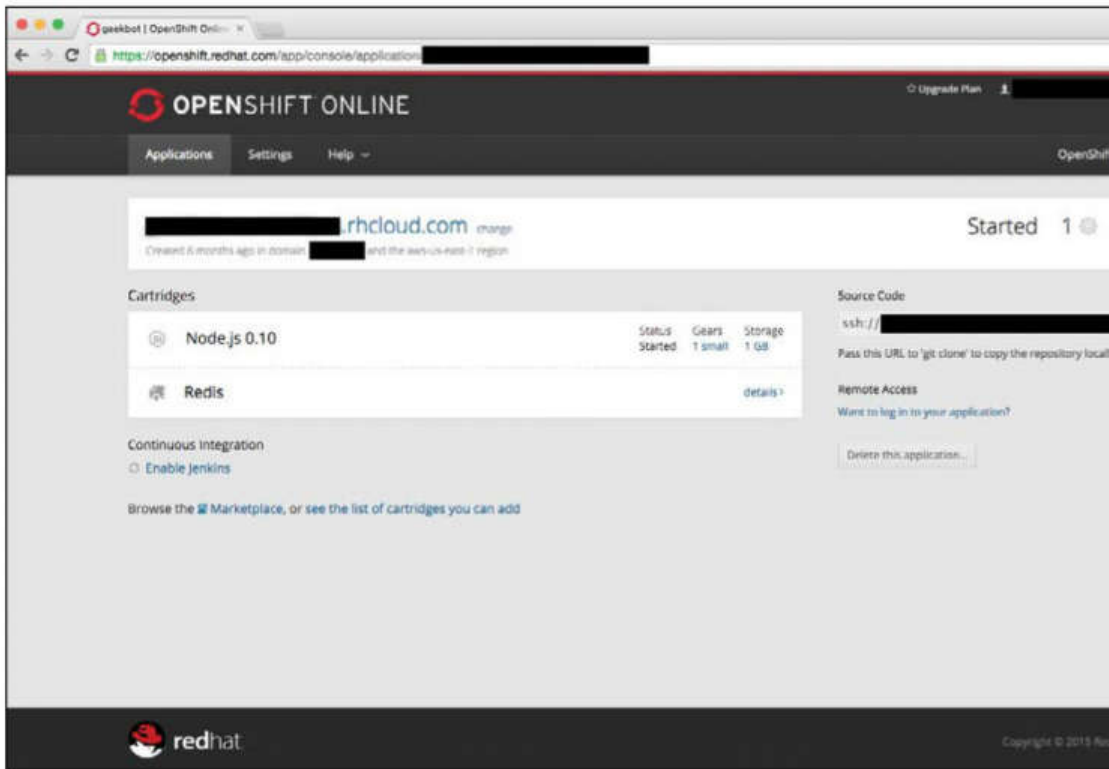
[Show setup instructions](#)

---

**Descriptive Label**  
Use this label to provide extra context in your list of integrations (optional).

---

**Customize Name**  
Choose the username that this integration will post as.



### Free hosting for your bot

One important factor to consider when building your bot is where to host it. You may already have suitable servers (whether physical or virtual) at your disposal that can serve your Node application accordingly, or it may be enough to run it on your own local machine during the day and close it down when you finish.

Should you wish to use the Slash Commands to GET or POST to an HTTP server you will definitely need something remotely accessible, and there are many free options available to you for hosting. OpenShift, by RedHat, offers a free tier of Node.js hosting (as well as other 'cartridges' or languages) and has the benefit of deploying your code automatically with every commit to a private Git repository it creates.

incoming message. Using some string functions we can then check for the existence of a specific character to lead the request. If found we can then fire the isUpRequest event.

```
return function init( slack ){
  bot = slack;
  slack.on( 'message', function( data ){
    if (data.hasOwnProperty('text')) {
      if (data.text.indexOf('^') === 0 && data.
        text.length >= 4 && data.text.split('
        ').length === 1) {
        emit.emit('isUpRequest', data);
      }
    }
  });
};
```

### 13. Incoming Webhook integration

In your browser visit your Slack group channel integration menu and select the 'enable an Incoming Webhook' option. Select a channel to post to and then copy the generated Webhook URL as we'll need that to associate incoming JSON data from our application to post back into the channel.

### 14. Express server plugin

Create a new plugin called 'express.js'. This will run a Node express server that the bot can interact with. Once again, define a module for the plugin and require the necessary files at the top for event management as well as for making HTTP requests.

```
'use strict';
var events = require('events');
var emit = new events.EventEmitter();
var request = require('request');
module.exports = (function(){
  // code to go here
})();
```

### 15. Slackr Webhook

Within the module require the packages to enable our Express server. The node-slackr package manages our Webhook integration as we pass it our generated URL. Configure your Express server details with IP/host name and port number.

```
var express = require('express');
var bodyParser = require("body-parser");
var app = express();
var slackr = require('node-slackr');
var webhook = new slackr('your_incoming_
webhook');
```

```
var config = {
  "web": {
    "ip": 'your_server_ip',
    "port": 9999
  }
};
```

### 16. Default route

The return statement of the module will initialise the Express server and set up the routes. Here we'll create a

default base route for our web app. This can be useful for sending uptime requests to the domain to make sure your bot is always up and running as well as looking out for any issues.

```
return function init( slack ){
  app.use(bodyParser.urlencoded({ extended:
  false }));
  app.get('/', function( req, res ) {
    res.send('nothing to see here... move
    along');
  });
  // custom paths go here
  var server = app.listen(config.web.port,
  config.web.ip);
  return server;
};
```

### 17. Notify the Webhook

Add any additional routes below the default base. Here we will create a /facepalmed route that uses a query parameter sent in a GET request as the name of the recipient. The JSON data is sent to the Incoming Webhook for processing and a response sent via Express for standard output.

```
rapp.get('/facepalmed', function( req, res ) {
  //Webhook notification
  webhook.notify({ "text": req.query.user_name
  +
  ' facepalmed ' + req.query.text });
  // Express out
  res.send('You just facepalmed ' + req.query.
```

## Developer tutorials

# Build a friendly bot to enhance your Slack group

```
text);  
});
```

### 18. Create Slash command

Back to the Slack group Integration menu. We will now enable Slash Commands. Create a new command /facepalm. Provide the URL (will need to be remotely accessible) for your Express server route and select the HTTP GET method. Customise your command for user assistance with hints and descriptions.

### 19. Express in action

Run your application using the node index.js or supervisor index.js command. Visit your express server in your browser and test the endpoints are accessible. You should be able to send the query parameter to the endpoint to generate the expected response that we'll send to the bot.

### 20. Get inspiration

Due in part to its incredible ability to allow custom integrations and extensions, Slack has proven to be a popular tool for many developers who have built their own open source bots and plugins. Make sure that you check out the official repository listing for inspiration from members of the development community: [api.slack.com/community](https://api.slack.com/community).

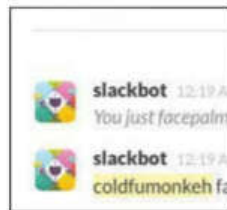
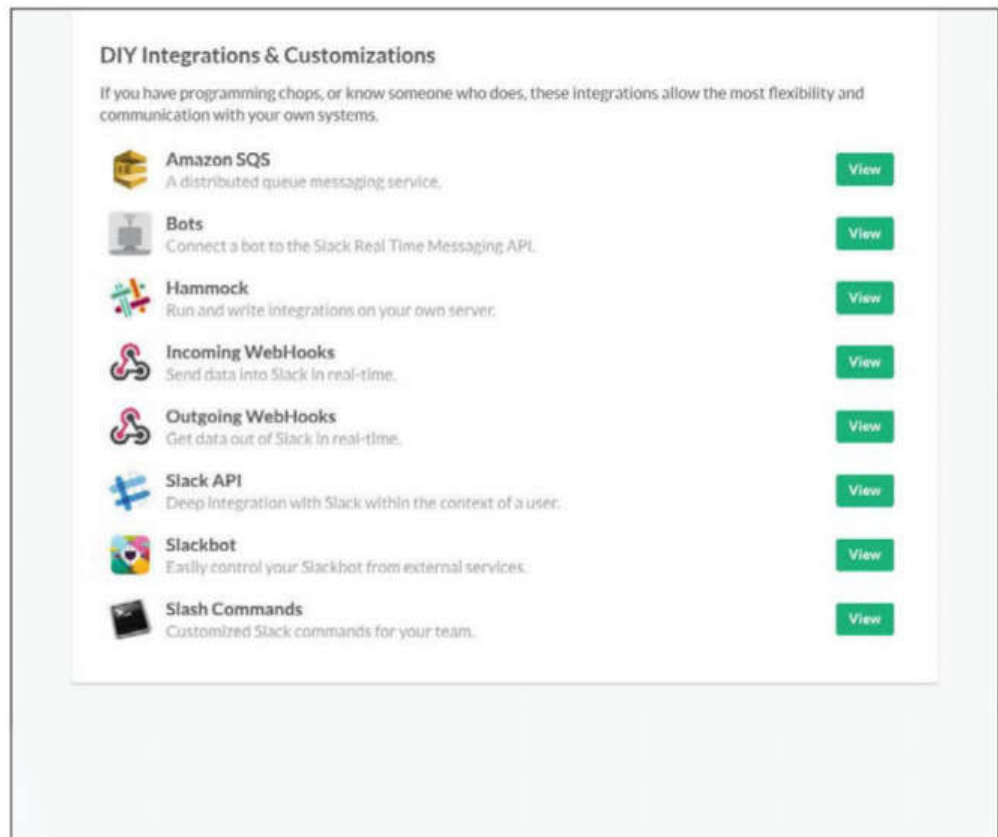


### Integrations available by default

One of the many benefits of using the Slack service is the number of services that are already available to be added and integrated into your group. Whilst free tiers are limited to a certain number, you will still have the freedom to choose from those that will benefit your workflow or the requirements of your team or community.

The services include a built-in Bitbucket or version control commit hooks, notifying you of who changed what; issue tracker services and monitoring tools to let you know what has broken and helps you to fix it; and Giphy API tools when nothing but an animated GIF will do to brighten the day and share some fun.

Couple these with your own custom commands and you can build something really powerful.



#### Top left

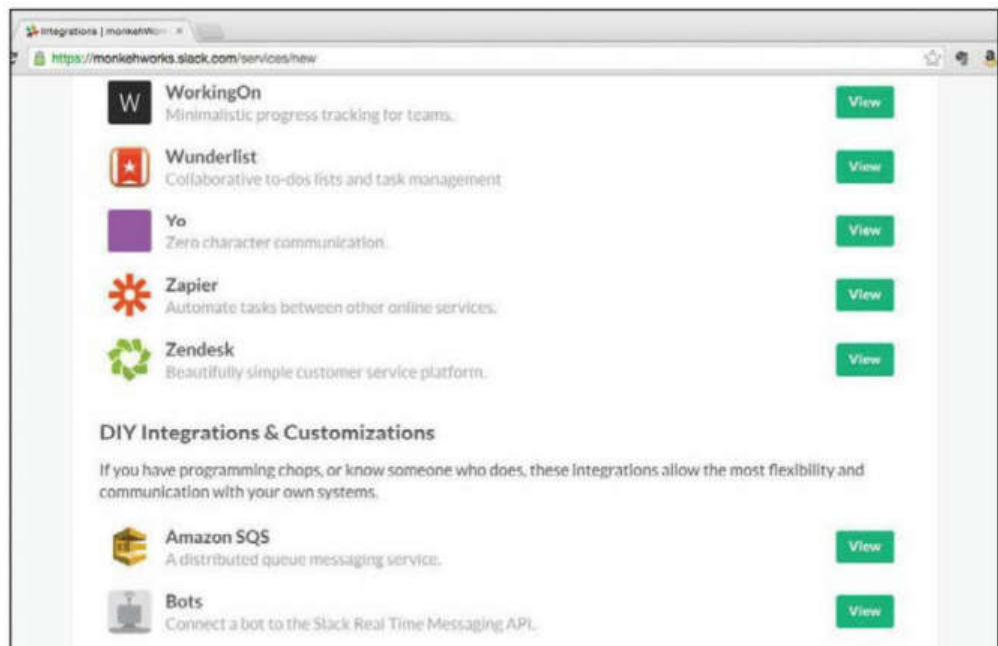
Test the endpoints are accessible from your running Express server in your browser. Also note the default route and custom command route with expected outputs

#### Top right

The Slash Command Webhook notification prompts the bot to send a channel-wide message as well as notify you of your action

#### Right

Custom integrations are available for selection, such as the bot and Slash Commands, to help you create something specific for your group





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<b>111WebHost</b> <a href="http://111webhost.com">111webhost.com</a>	Budget Web Hosting Pack	N/A	£10	1GB	1GB	5	✓	✗	Add-on	N/A	✗	✓	✓	✗
	WordPress Web Hosting Pack	N/A	£20	5GB	2GB	100	✓	✓	Add-on	N/A	✗	✓	✓	✗
	Startup Web Hosting Pack	N/A	£25	5GB	Unlimited	100	✓	✓	Add-on	N/A	✗	✓	✓	✗
	Unlimited Web Hosting Pack	N/A	£50	Unlimited	Unlimited	Unlimited	✓	✓	Add-on	N/A	✗	✓	✓	✗
	Unlimited Multi-site Web Hosting Pack	N/A	£300	Unlimited	Unlimited	Unlimited	✓	✓	Add-on	N/A	✗	✓	✓	✗
123-reg ( <a href="http://www.123-reg.co.uk">www.123-reg.co.uk</a> )	Starter	0845 859 0018	£29.88	1GB	5GB	20	✗	✗	✗	✓	✓	✓	✓	✗
123-reg ( <a href="http://www.123-reg.co.uk">www.123-reg.co.uk</a> )	Plus	0845 859 0018	£59.88	5GB	50GB	500	✓	✗	✗	✓	✓	✓	✓	✗
123-reg ( <a href="http://www.123-reg.co.uk">www.123-reg.co.uk</a> )	Pro	0845 859 0018	£107.88	10GB	100GB	750	✓	✗	✗	✓	✓	✓	✓	✗
123-reg ( <a href="http://www.123-reg.co.uk">www.123-reg.co.uk</a> )	Bus Pro	0845 859 0018	£179.88	20GB	Unlimited	1,000	✓	✗	✗	✓	✓	✓	✓	✗
123-reg ( <a href="http://www.123-reg.co.uk">www.123-reg.co.uk</a> )	Plus (MS)	0845 859 0018	£59.88	2GB	25GB	100	✓	✗	✗	✓	✓	✓	✓	✗
123-reg ( <a href="http://www.123-reg.co.uk">www.123-reg.co.uk</a> )	Pro (MS)	0845 859 0018	£107.88	5GB	50GB	500	✓	✗	✗	✓	✓	✓	✓	✗
123-reg ( <a href="http://www.123-reg.co.uk">www.123-reg.co.uk</a> )	Bus Pro (MS)	0845 859 0018	£179.88	10GB	150GB	1,000	✓	✗	✗	✓	✓	✓	✓	✗
2020Media ( <a href="http://www.2020media.com">www.2020media.com</a> )	Light User	0870 321 2020	£45	20MB	1GB	3	✓	✓	✓	✓	✓	✓	✓	✗
2020Media ( <a href="http://www.2020media.com">www.2020media.com</a> )	Everyday	0870 321 2020	£100	200MB	10GB	15	✓	✓	✓	✓	✓	✓	✓	✗
2020Media ( <a href="http://www.2020media.com">www.2020media.com</a> )	Business/Pro	0870 321 2020	£275	500MB	20GB	50	✓	✓	✓	✓	✓	✓	✓	✗
2020Media ( <a href="http://www.2020media.com">www.2020media.com</a> )	JAVA Tomcat	0870 321 2020	£300	100MB	3GB	15	✓	✓	✓	✓	✓	✓	✓	✗
2020Media ( <a href="http://www.2020media.com">www.2020media.com</a> )	ASP.Net	0870 321 2020	£275	100MB	3GB	15	✓	✓	✓	✓	✓	✓	✓	✗
4D Hosting ( <a href="http://www.4dhosting.com">www.4dhosting.com</a> )	Big Web Hosting	0207 183 0602	£60	5GB	Unlimited	20	✓	✓	✓	✓	✓	✓	✓	✗
4D Hosting ( <a href="http://www.4dhosting.com">www.4dhosting.com</a> )	Bigger Web Hosting	0207 183 0602	£120	10GB	Unlimited	75	✓	✓	✓	✓	✓	✓	✓	✗
4D Hosting ( <a href="http://www.4dhosting.com">www.4dhosting.com</a> )	Biggest Web Hosting	0207 183 0602	£180	20GB	Unlimited	100	✓	✓	✓	✓	✓	✓	✓	✗
4D Hosting ( <a href="http://www.4dhosting.com">www.4dhosting.com</a> )	Big VPS	0207 183 0602	£204	75GB	500GB	Unlimited	✓	✓	✓	✓	✓	✓	✓	✗
4D Hosting ( <a href="http://www.4dhosting.com">www.4dhosting.com</a> )	Bigger VPS	0207 183 0602	£360	100MB	1,000GB	Unlimited	✓	✓	✓	✓	✓	✓	✓	✗
4D Hosting ( <a href="http://www.4dhosting.com">www.4dhosting.com</a> )	Biggest VPS	0207 183 0602	£720	200GB	1,500GB	Unlimited	✓	✓	✓	✓	✓	✓	✓	✗
Blackfoot Hosting Ltd ( <a href="http://www.blackfoot.co.uk">www.blackfoot.co.uk</a> )	Home	N/A	£40	500MB	5GB	5	✓	✓	✓	✗	✓	✓	✓	✗
Blackfoot Hosting Ltd ( <a href="http://www.blackfoot.co.uk">www.blackfoot.co.uk</a> )	Business	N/A	£50	1GB	20GB	100	✓	✓	✓	✓	✓	✓	✓	✗
Blackfoot Hosting Ltd ( <a href="http://www.blackfoot.co.uk">www.blackfoot.co.uk</a> )	eCommerce	N/A	£100	2GB	40GB	200	✓	✓	✓	✗	✓	✓	✓	✗
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Blacknight ( <a href="http://www.blacknight.com">www.blacknight.com</a> )	Medius	35359 918 3072	£79	20GB	400GB	Unlimited	✓	✓	✓	✓	✓	✓	✓	✗
Blacknight ( <a href="http://www.blacknight.com">www.blacknight.com</a> )	Maximus	35359 918 3072	£45	30GB	600GB	Unlimited	✓	✓	✓	✓	✓	✓	✓	✗
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eHosting ( <a href="http://www.ehosting.com">www.ehosting.com</a> )	Personal	0844 999 4100	£59.88	2.5GB	Unlimited	50	✓	✗	✗	✗	✓	✓	✓	✗
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eHosting ( <a href="http://www.ehosting.com">www.ehosting.com</a> )	Virtual	0844 999 4100	£227.88	50GB	Unlimited	Unlimited	✓	✗	✗	✗	✓	✓	✓	✗
Evohosting ( <a href="http://www.evohosting.co.uk">www.evohosting.co.uk</a> )	Starter	N/A	£29.99	500MB	1GB	3	✓	✓	✓	✓	✓	✓	✓	✗
Evohosting ( <a href="http://www.evohosting.co.uk">www.evohosting.co.uk</a> )	Home	N/A	£54.99	2.5GB	30GB	50	✓	✓	✓	✓	✓	✓	✓	✗
Evohosting ( <a href="http://www.evohosting.co.uk">www.evohosting.co.uk</a> )	Business	N/A	£79.99	6.5GB	Unlimited	Unlimited	✓	✓	✓	✓	✓	✓	✓	✗
Evohosting ( <a href="http://www.evohosting.co.uk">www.evohosting.co.uk</a> )	eCommerce	N/A	£159.99	30GB	Unlimited	Unlimited	✓	✓	✓	✓	✓	✓	✓	✗
Fasthosts ( <a href="http://www.fasthosts.co.uk">www.fasthosts.co.uk</a> )	Personal	0808 168 6777	£32.87	5GB	Unlimited	50	✓	✗	✓	✓	✓	✓	✓	✗


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Fasthosts (www.fasthosts.co.uk)	Business Bronze	0808 168 6777	£58.38	50GB	Unlimited	500	✓	Option	✓	✓	✓	✓	✓	✓
Fasthosts (www.fasthosts.co.uk)	Business Silver	0808 168 6777	£76.39	Unlimited	Unlimited	Unlimited	✓	Option	✓	✓	✓	✓	✓	✓
Fasthosts (www.fasthosts.co.uk)	Business Gold	0808 168 6777	£101.89	Unlimited	Unlimited	Unlimited	✓	✓	✓	✓	✓	✓	✓	✓
Fasthosts (www.fasthosts.co.uk)	WD Starter	0808 168 6777	£149.99	20GB	Unlimited	Unlimited	✓	Option	Option	✓	✓	✓	✓	✓
Fasthosts (www.fasthosts.co.uk)	WD Advanced	0808 168 6777	£199.99	Unlimited	Unlimited	Unlimited	✓	Option	Option	✓	✓	✓	✓	✓
Heart Internet (www.heartinternet.co.uk)	Starter Professional	0845 644 7750	£29.80	2.5GB	10GB	1,000	✓	✓	✓	✓	✓	✓	✓	✓
Heart Internet (www.heartinternet.co.uk)	Home Professional	0845 644 7750	£89.99	Unlimited	Unlimited	10,000	✓	✓	✓	✓	✓	✓	✓	✓
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	✓	✓	✓	✓	✓	✓	✓	✓





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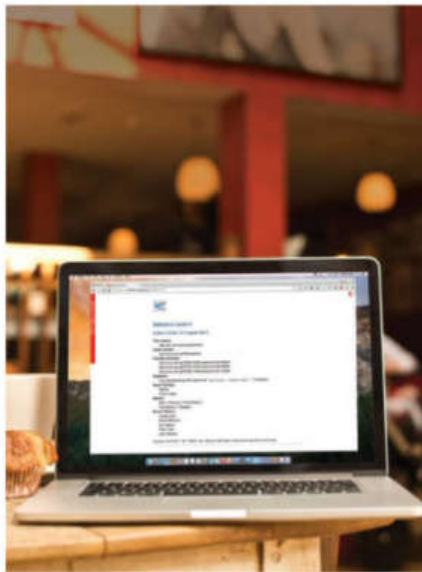
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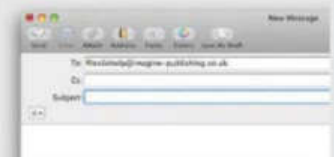


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