The voice of **web design**

net

Issue 272 : October 2015 : *net.creativebloq.com*

*FEATURE

RESPONSIVE DESIGN BEST PRACTICES

Master design for smart devices of various sizes

IMPROVE YOUR UX WITH GOOGLE ANALYTICS

Use analytics to boost traffic and increase user retention

Future


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WELCOME

EDITOR'S NOTE

It's another bumper issue! First of all, we have two excellent freebies for you. We've teamed up with the experts at MailChimp to present a 20-page guide to email marketing, which is packed with useful advice to help you build better emails.

And we're also offering you access to a beginners' course to AngularJS courtesy of Pluralsight – the world's largest tech and creative training library. The online videos demonstrate how to use the essential abstractions of AngularJS, including modules, controllers and directives. Head to *netm.ag/angular-272* to unlock your free course.

As usual there's also a great mix of practical tutorials and features, inspiration and food for thought. Rachel Andrew, for example, presents an introduction to the CSS Grid Layout on page 98, a great accompaniment to her Generate London talk later this month (or, if you have found this copy in your conference goodie bag, today!).

Finally, we're announcing the winners of the **net** awards on 18 September. If you are not able to attend our ceremony, check out *thenetawards.com*, where all the winners will be listed as soon as they are announced. Don't miss it!

Oliver Lindberg, editor
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FEATURED AUTHORS

MICHAEL BEASLEY

Michael is a UX researcher and designer. From page 68 he explains how to use web analytics to unlock insights into users' browsing behaviour
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PATRICK HANEY & JENNA MARINO

Patrick and Jenna are Boston-based design studio Hanerino. From page 76 they discuss the best practices and pitfalls of cross-platform design
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ANGUS EDWARDSON

Angus is the product director at GatherContent. On page 28 he explores key strategies we need to consider for the future of content management
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LYZA DANGER GARDNER

Lyza is co-founder and CTO of Cloud Four, and helps make and share the mobile web. She curates our gallery this month (see page 44)
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NEXT ISSUE ON SALE 1 OCTOBER 2015

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P83-114 Grapholvent 70gsm

TYPEFACES
Antonio, Share Tech, Merriweather, Titillium Web

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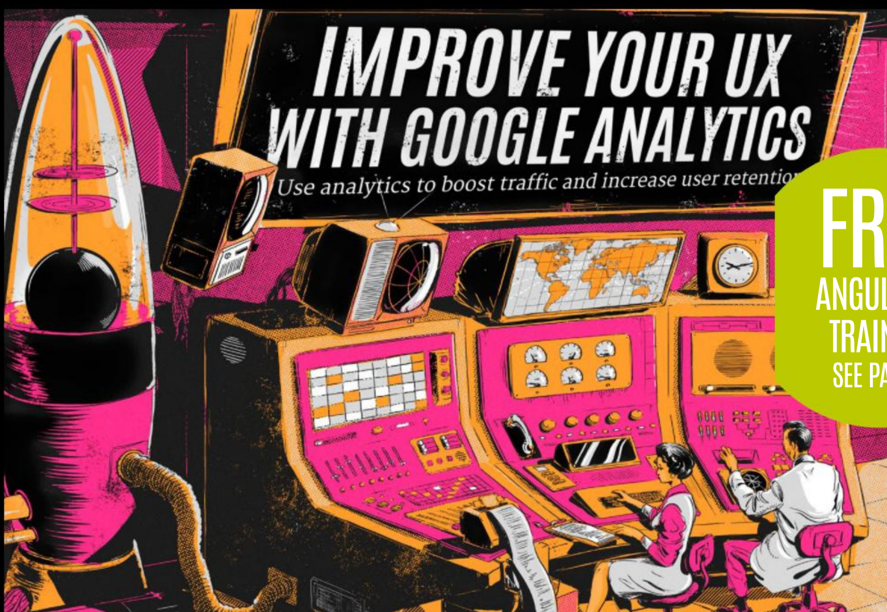
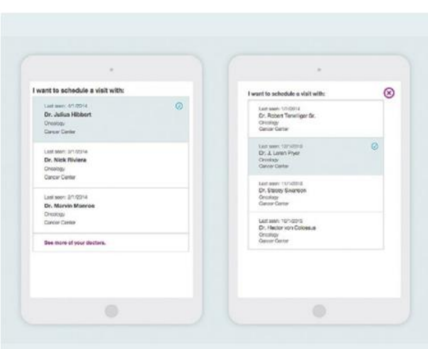


FREE ANGULARJS TRAINING SEE PAGE 96



EXCLUSIVE VIDEO TUTORIALS!

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

NETWORK

Mail, tweets, posts and rants

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SERVER SOLUTION

Much-needed article on WP plugins *[Issue# 271]*. It's so difficult to select and evaluate plugins – the rated reviews in WP are a bit 'TripAdvisor' (i.e. you don't know who's posted and can't always trust them). This should become a regular feature with devs that use these plugins contributing.

However, with WordPress being adopted by more and more business sites, a key element is missing: a staging server solution. Too many clients assume 'Status: Draft' means 'save a copy and then let me publish', not realising they are working on the live site. The 'Revisions' option is too finicky for casual users/ editors. Having a separate staging server that is easy to edit and publish to live would be a distinct advantage.

Mark Robson, Bracknell, UK

net: Thanks for your suggestion, Mike! We asked WordPress expert Carrie Dils for her response: "Some of the managed WordPress hosts do offer staging servers to address this issue (a site clone you can modify and then 'push' live). I've had good experiences with both WP Engine and Flywheel."

FLASH-BACK?

I am an avid reader of net, and I had an idea for an article I would find interesting. Back in the day I worked for a design agency and we'd pass around links to cool Flash-based sites. As we are at the dawn of a new era sans-Flash, I thought it might be interesting to track down the developers of some of these iconic sites to see if they have embraced the new tools and technologies. You could possibly run a feature on hype (*tumult.com/hype*), a tool for web-based animation, or look at how creatives are getting to grips with animation without Flash.

Christopher Z. Szydelko, Huddersfield, UK

net: Thanks, Christopher, another great suggestion. You may also want to check out Val Head's recent primer on interface animations (the Cover Feature of issue #265).

BE PREPARED

I just bought and read your freelance issue. I would like to ask if you have any good references for preparing a business plan?

Alini Tjin, ID

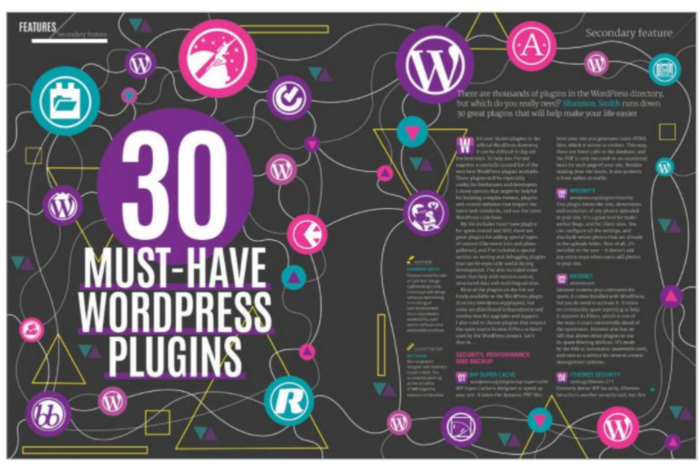
net: We put this question to our Twitter followers and this is what they suggested: the Business Model Canvas (*netm.ag/canvas-272*); business advice resource The Skool (*theskoolrocks.com*); business planning app Knowlium (*knowlium.com*); *The Lean Startup* by Eric Ries; *The Small Business Handbook* by Philip and Sandra Webb; and entrepreneur Steve Blank's site (*steveblank.com*), which is full of useful information. This should be enough to get you started!

FIRST CONTACT

I'm attending the conference in London in September and coming all the way from sunny South Africa! Please can you tell me more about the networking events that you guys have planned? I need to plan my itinerary. Looking forward to attending!

Hitesh Jinabhai, ZA

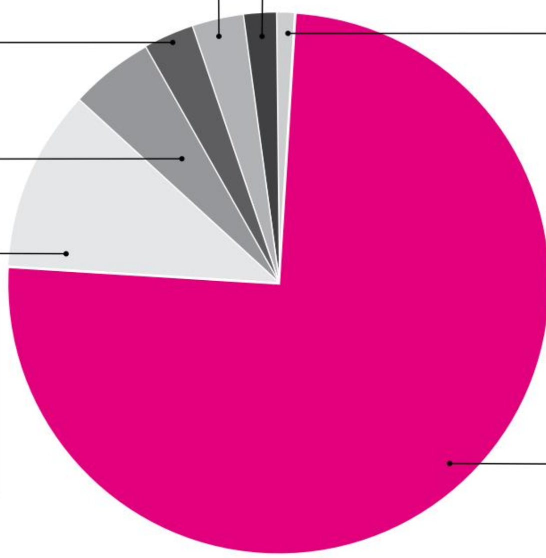
net: The Generate party will kick off at 5pm following the first day of the event. Just pop next door to Sway (*swaybar.co.uk*) where there will be free drinks, nibbles and a chance to network with speakers and fellow attendees. During the event there will be plenty of chances to network (or even attend a free workshop) in the breaks. See you there!



Plugged in It can be tricky to know which WP plugins are worth your time. In issue #271, Shannon Smith listed the 30 that will make your life easier

★THE POLL

WHAT'S THE BEST WEB ANALYTICS TOOL?



Webtrends 3%
Improves client interactions with multi-channel digital

Mixpanel 3%
Measures actions instead of page views

Kissmetrics 5%
Fix your blind spots with funnel reports that track individuals and groups

Clicky 11%
Simple, real-time data in granular detail

Mint 2%
See how people are finding your site and listen to what they're saying about you

Mouseflow 1%
Records website visits and creates heatmap displays

Google Analytics 75%
Custom performance metrics from the web's biggest player

From our timeline

Are paid coworking spaces worth the extra expense?

IMO no, there are plenty of good sized cafés and meeting spaces.
@peteofrepublic

Can be good to encourage collaborative working in a creative environment with others!
@aimee1986

Most coworking spaces offer free taster days which can answer this.
@edagoodman

Depends on what you gain out of it. If $500/month gives you 2x returns then might be worth it.
@patrickbjohnson

Our business used to have an office, but we can all work remotely. Eventually we got a corporate membership at a coworking space that cost as much per year as the office did per month. It's a great compromise.
@pstephan1187

It really helped me. Not because of the space, but because it helped to develop a more focused mindset between work and home.
@JamieKnight

Most definitely. It's an investment in your personal efficiency, social and business contacts and general work attitude.
@derjo_de

It depends. There's stuff like having a coworker in an unrelated field recommend you when talking to their clients. That's valuable.
@thunki

COOL STUFF WE LEARNED THIS MONTH

LEGO LIMBS

With the rise of 3D printing, the field of prosthetics has come on in leaps and bounds. Now with a little help from Lego, a new prosthetic arm, Iko, lets kids customise their artificial limbs. Created to help overcome the stigma of prosthetics, Iko can be worn as a hand or swapped out for a digital spaceship.
netm.ag/lego-272

GOOGLE VISION

In another attempt to keep pushing wearables, Google recently filed a patent for a Glass-like gadget that would record videos and make them searchable. The device would pick up on certain actions, then file the event into the cloud for future reference. Could this herald the start of lifelogging, or is it a case of too much information?
netm.ag/google-272

FLYING FACEBOOK

Facebook's finished making Aquila, a solar-powered, unmanned aircraft that will deliver radio internet coverage to remote places via lasers. Capable of flying as high as 90,000 feet, Aquila will work with a host of other satellites to beam the internet to unconnected communities.
netm.ag/facebook-272

EXCHANGE

Send your questions to netmag@futurenet.com

Practical advice from industry experts

THIS MONTH FEATURING...

ASAD ALI

Asad is a partner at Blacks Solicitors, specialising in digital media
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TIFFANY FARRANT-GONZALEZ

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KERRY CRAWFORD

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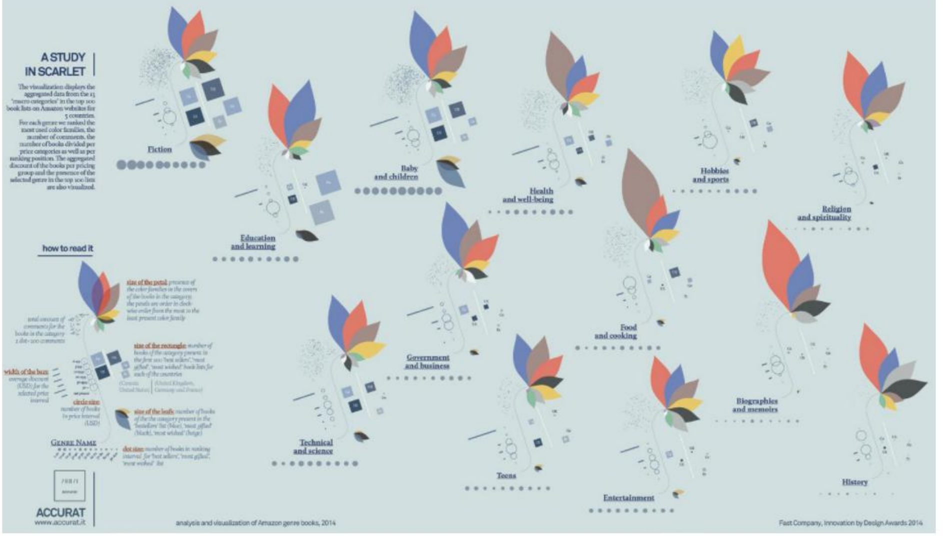
★ QUESTION OF THE MONTH

How do you reduce the risk of content creep or feature creep?

Callum Conway, Montreal, CA



Beautiful data A Study in Scarlet by Accurat is a great example of beautiful information

TF: Sadly it's a common problem in infographics to allow illustrative elements and embellishments to drive a piece rather than the actual data. Some of the most effective chart types (e.g. the bar chart) can be seen as boring. Data designers are often asked to make the data look more 'exciting', resulting in the reader being spoon-fed data in bite-sized chunks. But being beautiful and being informative aren't mutually exclusive. And ultimately it's the story you're telling with the data, not the embellishments of a piece, that will determine its success.

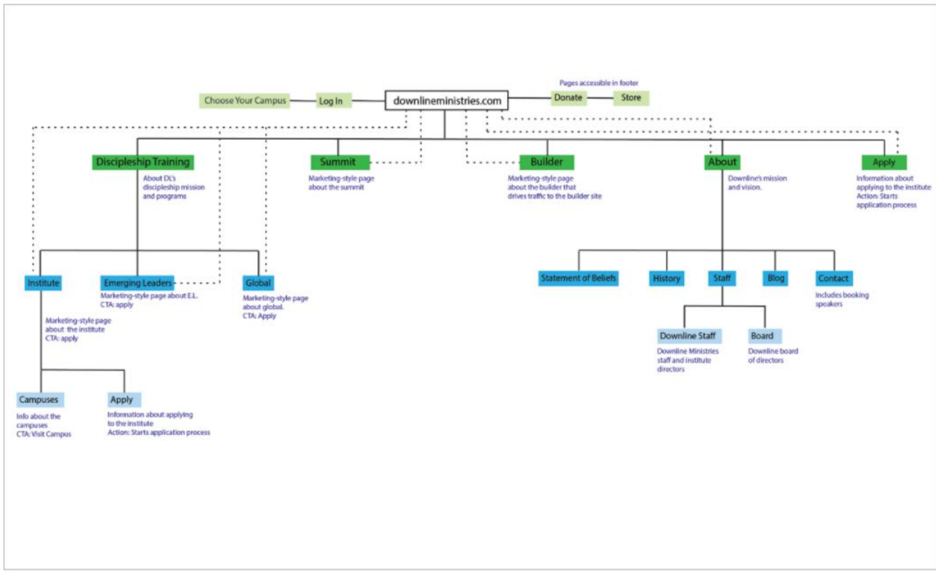
MOBILE CONTENT

CONVINCING CLIENTS

What's the best way to convince a client mobile content strategy is important?

John Byrne, Manchester, UK

KC: Ultimately, you don't get to dictate how people access your content, so it's important to make sure it is accessible across all devices. I would encourage you and your client to think holistically. You want to make sure your client's content is valuable and awesome on all devices, which means you'll need to create a flexible content strategy – one that includes content structures that can adapt for different situations.



Modelling session Sitemaps can be used to plan how the content elements will fit together

LEGAL

SOCIAL SITES

Are blogs and social news websites allowed to use content that's already shared on the web and Google within their posts?

Jacob Lee, London, UK

AA: Not really. The rules relating to copyright, trademarks, privacy and so on apply to things on the internet in the same way that they apply to everything else, and the fact that something has been made available online doesn't mean the person/business who put it there is happy for it to be used by everyone else. In practice, some people won't mind, but the legal position means it is not always safe to take the risk.

CONTENT STRATEGY

MODELLING SESSION

Do you have any tips for approaching and getting more out of a content modelling session? Where do you start?

Robert Riley, Dryton, UK

KC: Go in prepared. Spend some time getting to know the current site (if there is one) and its content types beforehand. Keep your modelling group small and focused, but make sure any key stakeholders (like the people who are setting the site/brand's vision, and the ones who create or manage content on a daily basis) are present.

Then, start brainstorming. I like to start by having the group make a list of necessary pages, then list the content types each page should include. From there, you can break each content type down into the elements it's made of (for example, a blog would have posts that include photos that include captions). As you go, clearly define each page's purpose, and check that every element of every content type is working toward that purpose.

LEGAL

FREELANCER VS OWNER

What is the difference between a freelancer and a business owner?

Gray Ghost Visuals, Buffalo, NY

AA: Technically, they can be one and the same. However, the key distinction with a freelancer is that they are not tied to any one employer and are free to engage on a number of projects at any one time. Freelancers are responsible for their own PAYE and National Insurance contributions, and don't receive the usual employment benefits such as holiday pay, maternity/paternity leave and sickness allowance.

CSS AND SASS

THE NORM

Do you think Sass has become the norm to use it?

Dan Davies, North Wales, UK

GE: Sass was created when some people realised CSS was not evolving

▶

3 SIMPLE STEPS

How do you create the perfect infographic?

Alice Douglas, Carmarthenshire, UK

TF: Data visualisations, charts and infographics are tools to help make data accessible. With that in mind, it's important to choose a method of presentation that's accurate, clear and informative.

GET TO KNOW YOUR DATA

First, you need to get to know your data. Play with filter tables, spreadsheet columns and basic chart types, and consider questions like: How much data do I have to work with? Can it be categorised? And are there any outliers?

LET THE DATA TELL ITS STORY...

... rather than finding data to support a pre-determined message. The latter is a sure-fire way to mislead your audience (even if you have good intentions). Infographics should be about finding the meaning within a set of data.

CHOOSE THE RIGHT VISUAL

Don't sacrifice clarity in order to make something look 'cool'. The challenge is to strike a balance between engaging and helpful. If a bar chart is the clearest way to present your particular dataset, don't be scared to use a bar chart.

quickly enough. Sass overcomes this problem by offering a super-toolbox to frontend developers. Yes, Sass is still a kind of 'hack' but it offers too many useful and convenient tools compared to traditional CSS to make it worthwhile avoiding. I have been writing in Sass for years now and I simply couldn't go back. I hope native CSS will become more Sass-like in the future, but I think we will have to deal with preprocessors for a while before CSS catches up.

LEGAL
LANDMARKS

Is there any legal failsafe time (i.e. public domain) for using buildings (landmarks) by name and drawn art in websites/games?

Ferhat Cerit, Ankara, TR

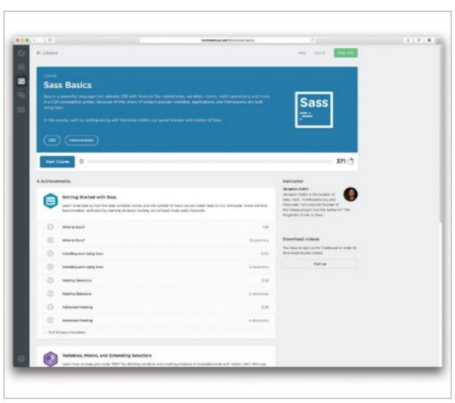
AA: Yes (probably!), but it will vary from country to country. Part of the UK copyright rules say that you do not infringe copyright on a building by 'making a graphic work representing it', 'making a photograph or film of it' or 'making a broadcast of a visual image of it'. The rules were made before the rise of the internet and mainstream gaming, so there is no direct mention of them, but it is likely the same rules would apply.

CONTENT STRATEGY
KEY POINTS

What are the key things I can do to make sure content is publishable/valuable on every device?

Isabella Morley, OH, US

KC: Look closely at your content creation process and the way you create each content type. In a flexible content structure, the elements of each content type should be able to be moved around. Once you've made your content flexible, consider your users and how they use your site. Study your analytics and see how users are behaving on phones, tablets or desktop, and if some pages, sections or actions are being used more than others. Do some user research to determine where, when and how people are using your site. Then adapt your content elements to their environment, users' needs and your brand goals. For example, you could change the amount of information displayed with a photo for different devices, or alter the order of the homepage on a phone versus the desktop site.



Online learning Treehouse provides great tutorials for those who aren't familiar with Sass

CSS AND JAVASCRIPT
ANIMATIONS

What deserves more focus in animations: CSS or JavaScript?

Abhishek Soni, Faridabad, IN

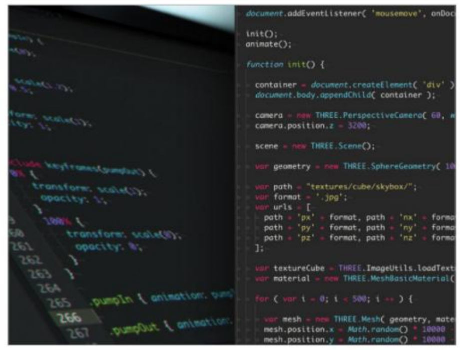
GE: It depends on the case. My advice is to use CSS for small and standalone UI animations. If it's too time-consuming and requires more control, try JavaScript. CSS transitions and animations are great for creating a side panel menu or showing a modal box with ease. This is definitely the simplest and fastest way to animate something on your website. JS animations are perhaps trickier, but provide more power and variety.

INFORMATION DESIGN
STARTING POINT

When you begin working on a visualisation project, what's the first thing you do?

Patrick Kent, Ravenswood, AU

TF: Once I've familiarised myself with the data, I sketch, sketch, sketch. This encourages you to focus on the structure of the graphic first, before you start thinking about fonts, colour palettes and embellishments. The structure is arguably the most important part of any data visualisation, as it determines how the data is organised and controls the flow of the narrative. A good structure keeps the integrity of the data intact and aids comprehension, whereas a bad structure can obscure the facts and skew interpretations. Because of this, no matter how big or small the project is, I always create a wireframe. This provides me the opportunity to focus solely on how the piece will function before visual design choices.



Animate Both CSS and JS can be used for animations

CSS AND SASS
WHAT'S THE FUSS?

Why is everyone crazy about Sass, Less and the like? I can't get used to it. Do you think that not using it is a problem?

Francisco Couto, Porto, PT

GE: CSS preprocessors are a must-have asset for a modern web developer. If you're still working with pure CSS, you should embrace the future and take a look at Sass now! CSS preprocessors offer a varied range of useful tools, as well as maintainability and flexibility while building your web app. The best advice I could give is to keep trying. There are plenty of resources on the web which help beginners with Sass, Less and so on.

LEGAL
SIDE PROJECTS

If your side project starts making money, are you better spinning off a new company, or managing it under the existing one?

Martin Fraser, Fife, UK

AA: Unless the spin-off is distinct from the existing business, there seems to be little need to spin it off. However, if you are targeting new markets, investors or utilising a new brand (with unique logos, web domains and so on), this may be the catalyst for doing so. Also, being a separate legal entity means if things don't go to plan the core business is safeguarded. There are of course financial and taxation implications, so seek advice from an accountant.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Shopify is also fast becoming the choice of enterprising web designers and developers. With its easy-to-use theme-based system and robust APIs, thousands of Shopify Partners are building profitable businesses by helping clients with their Shopify stores. With hundreds of new stores launching every day, demand for Shopify theme developers is on the up. Can you afford to miss out?

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Getting started with Shopify is simple. To try out the platform, head to *shopify.com/partners* and sign up for free. As a Partner, you can launch fully featured development stores to test all of Shopify's features. You'll also have access to a number of benefits including:

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- Unlimited development stores
- Private Partner forums
- 24/7 Partner support channel
- 20% revenue share for every new client
- Marketing materials
- Technical workshops and webinars

The Partner program supports freelancers and agencies every step of the way, from fielding technical queries to providing advice on how to pitch Shopify to your clients.

Once you have launched five Shopify stores for clients, you can apply to become part of the Shopify Experts Program – a directory that connects Shopify merchants with qualified designers and developers. Many top experts receive over 30 enquiries per week as a result of their listing in the Shopify Experts Marketplace.

GROW YOUR BUSINESS

Running a successful, ecommerce-focused web design business is challenging. With that in mind, we recently asked successful Shopify Experts and members of the web industry to share their knowledge in a free ebook called *Grow Vol. 1: A beginner's guide to growing your design or development business*. It's packed full of insights, lessons learned, and tips to help your business succeed. You can download it from the URL below.

Start growing today – download your free ebook at

shopify.com/grow-net272

FEED

People, projects & paraphernalia

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Marcy Sutton reports on the talks, themes and costume changes at CascadiaFest in the Pacific Northwest

ARCHILLECT

Murat Pak has created an AI that curates visual content online to inspire other artists

★ SIDE PROJECT OF THE MONTH

INFO

job: Designer and director

w: *undream.net*

t: @muratpak

net: Tell us about your day job?
MP: I am a director/designer/developer hybrid.

net: Where did the idea for Archillect come from?
MP: My initial idea was to make an open contribution platform for everyone to put their inspirational images on the same metaspace. However, I realised this would require additional time to manage the whole system. The idea of Archillect ('archive' + 'intellect') as a self-curating visual inspiration library occurred to me as the next step. You can see the results at *www.archillect.com*.

net: Have you been surprised by its success?
MP: As Archillect is based on human interaction and relies on feedback through social media to curate content, it was hard for me to foresee the end result. The most exciting moment was when I realised the posted content was evolving to satisfy the followers. It showed character and decision-making. This is why Archillect is referred to as 'her' instead of 'it'. People didn't guess she's a bot for a long time. She constantly gets job offers as a visualist!

net: Why do you think she appeals to web designers?
MP: Because of inspiration. Who doesn't like inspiration? Not specifically web designers either: we're all affected by emotional triggers.

net: What were the key technical challenges you faced while creating Archillect?
MP: The most challenging part was the core, which is where the actual magic happens. You can think of the core as Archillect's mind. To make her guess what is going to be 'likeable' next needed lots of thought. The process involves many personal assumptions and hypotheses, so the outcome isn't perfect, but right now I would say that things are well-balanced.

net: Has the project helped you to be more creative in your own everyday work?
MP: As a creative I like appreciation. For most of us, I believe it's one of the main drives to create something new. Personally, besides getting inspired from the posted visual content, I am more excited that others are inspired by this as well.

Illustration: Ben the Illustrator *huddleformation.prosite.com*

YOU MUST COMPLY

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

*CLIENTS FROM HELL

I deal with most of the people in my company through email. I am convinced none of them actually read my emails, or they just choose to not read whatever they disagree with.

On one occasion, a client asked for some changes to an ad I'd created for them.

Me: Great, here is the revised ad. Please note I was unable to do this last edit, because you requested to remove the required disclaimers for the brand. For compliance purposes, you will need those disclaimers in there.
Client: Thank you, but you didn't complete the edits. I asked you to remove all that text at the bottom.
Me: As I stated in my last email, I can't remove the disclaimers. If there are no more revisions, the ad is ready.
Client: I don't understand why you keep sending the same ad without making the changes I want!
Me: Read my previous emails.

Some time passes ... and my phone rings.

Client: I think we might have a communication issue, so I decided to call. Do you have a few minutes to discuss changes to the ad?
Me: I already made the revisions that you requested that aren't breaking compliance rules. I am working on another project right now ...
Client: Do you have the ad up in front of you? All that text at the bottom should be removed. That way you can make my phone number bigger, and that is the most important part.
Me: I can't remove that text.
Client: Why not?
Me: It violates company policy and would cause a lot of compliance issues.
Client: But this is for just my small neighbourhood newsletter, no one there will complain that text isn't on there.
Me: I can't do it.
Client: If you won't help me, I will get it done myself. Your supervisor will hear about this.
Me: That is just fine, I already submitted the emails to make sure we're clear on best practices. We've scheduled a meeting with your office supervisor to come in and give a presentation on the importance of following the brand guidelines and keeping things within compliance.

CLIENTS FROM HELL
clientsfromhell.net

*HOW TO

DEPLOY YOUR CODE EFFICIENTLY

There's a wealth of tools to help you deploy your code. We asked our followers for their picks

GIT

Version control system Git is a firm favourite for this task. @steveshreve recommends Tower as a client, and accessing your server via SSH. @danielmall concurs: "ssh into server, pull from Git repo."

HELPFUL TOOLS

There's a range of interesting tools that work with Git. "Git checkin and Travis CI to run tests, then deploy," suggests @htmlandbacon, while @niceux likes to "push a deploy from a GitHub repo to Heroku through its UI (one button/click)". @gjhead has a lot of love for Beanstalk's deploy feature, as does @SNeilson81

... AND SOME MORE

The suggestions kept coming. @richjg_ and @_AndrewMortimer named Capistrano as their favourite, and DeployBot got shout-outs from @glennjacobs and @DimaSabanin. Finally, @TomWade and @richjg_ pledged their allegiance to Deploy.

DROPBOX

For @garyrozanc, syncing with Dropbox does the trick: "I have a shared Dropbox folder on both my computer and server. Bash script transfers files on server to production folder when ready."

HARMONIOUS HARBOUR

Ashley Baxter whisks us around RookieOven, a former shipyard that's now a dock of creativity

★ WORKSPACE

The RookieOven (*rookieoven.com*) is a coworking space housed in a converted shipyard in Glasgow, Scotland. Shipbuilding is an integral part of Glasgow's history, and while it has long since declined, it makes a great studio. This particular room was once used for drawing shipping blueprints.

The shared space only opened its doors this year, so we are in the early stages of bringing it to life. Our aim is to create a base for freelancers and small businesses with a strong focus on tech.

My favourite feature of our studio is, of course, the people **(1)**. Having worked from home for eight years, I now enjoy coming into a dedicated space and surrounding myself with clever people I can bounce my ideas off. As it's a coworking space, everyone here is working on their own thing. There's a great mixture of skills and vocations, but with a cohesive interest in tech.

With that said, it isn't all work – I also play! We have quite a few office toys, such as Scalextric and an Xbox, but my favourite is the full-size pool table **(2)**. It's a great way to break up the day and get you on your feet, although it can get a bit competitive!

My dog Indie **(3)** comes to work with me. I'm a big believer that spending time with dogs can relieve stress, and Indie provides a welcome distraction during those frustrating moments when my code isn't working. I think every workspace should have a dog.

Although chalkboards **(4)** remind me of school, they are a great way to explore the early stages of a project or idea. As nothing lasts forever on a chalkboard, you can't afford to be precious when using one. It's the perfect tool for a chaotic brain dump.

After a long day, it's not uncommon for us to relax on our giant bean bag **(5)** with a book. We have a library of business books, but the most recent one I've read that's impacted my approach is *The Dip* by Seth Godin.

★ PROFILE

Ashley Baxter (*iamashley.co.uk*) runs Insurance by Jack (*insurancebyjack.co.uk*). She also takes photos and plays video games


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Did you know that forests in Europe, which provide wood for making into paper and many other widely used materials, are 30% larger than in 1950? In fact they have been increasing by 1.5 million football pitches every year. †
Magazines are printed on paper from natural and renewable wood, which is great to know if you love reading your favourite magazine.
† World Forest Resources, 1953 and UN FAO Global Forest Resources Assessment, 2010
To discover some surprising environmental facts about print and paper, visit www.twosides.info
See the woods... and the trees!
Win one of 30 European trips for two people to see sustainable forestry and paper making in action! BLIPP TO ENTER or visit twosides.info/competition
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TWO SIDES
Entrants must be aged 18 or over. Entries close 31.01.16. For full terms and conditions visit www.twosides.info/competition-terms

STUFF I LIKE

STACEY MULCAHY

Tech evangelist, Microsoft
thebitchwhocodes.com

VISUAL STUDIO CODE

I moved from Sublime Text to this on both my PC and Mac. It's a really good-looking IDE, but the debugging tools that I leverage for Node.js are what makes it invaluable for me on a daily basis, along with the support for my everyday languages like Python and JS.
code.visualstudio.com

GRAPHIC PORN

I think everyone needs a go-to site that curates graphic awesomeness, and this one currently is mine. Zach Lieberman tweeted about it, and he made me an addict. It's just a visual buffet of amazing work
graphic-porn.com

HACKADAY

I follow them on Twitter, and check the site daily. The site showcases so many crazy hacks: some safe and practical, some completely not. I love to see the insane ideas people come up with, and more importantly, how they got there. It's awesome to see so much software agnosticism in one place.
hackaday.com

SPRAY PAINTING

This month … **Jess Caddick** on how street art helps her explore new directions in typography

* BEYOND PIXELS

Bristol is a city abundant in street art, so it was only natural that when I moved here three years ago my interests peaked. Up until recently, I had never actually considered painting myself, let alone that it could spawn a hobby.

I picked up my first tin of paint (Montana 94) a mere three months ago and mooched down to a local painting spot along with my boyfriend and ex-writer, Andreas. With a sketch in hand, a belly full of excitement, and a little bit of guidance from Andreas, I started my first piece. From the instant I began, the rush of adrenaline and the challenge of something new was a winning combination. I knew this was a hobby I wanted to pursue.

A designer by trade, with a passion for typography and lettering, I've always been interested in letterforms whatever the medium or canvas. I see graffiti as more than 'vandalism' or 'art', but as a beautiful expression of letter construction, often executed with incredible skill. The people (or writers) responsible have all trained themselves as typographers too, whether as a learned trade or just from hours and hours of sketching graffiti since they were kids. People are constantly pushing the boundaries of the shapes and connections between letters.

Despite most graffiti artists painting their aliases, I prefer to paint words I like the sound of, that have meaning, and that people can connect with on some level. At the end of the day, I don't consider myself a 'writer' by any means; I'm a designer after all, with an ever-growing passion for typography that needs to be explored within other realms. Thus far I've chosen to focus on common slang words such as 'dope' and 'word'. And as of yet, I wouldn't even say I have a particular style. My influences are strongly typographic but I like to take inspiration from the New York and Euro-style graffiti when choosing colour palettes and picking up on new techniques.

I hope to continue to develop my practice on a personal journey. But mostly, it's an alternative to producing work on paper or on a screen. Painting allows me to step outside and breathe the fresh air, get hands-on and explore new media. It also encourages me to try new techniques whilst designing a typographic piece, which reflects in my day-to-day work. I find having a hobby so closely related to my career stimulating, knowing that away from my desk I'm still scratching that creative itch, but with no deadlines, clients or expectations – just freedom.

* PROFILE

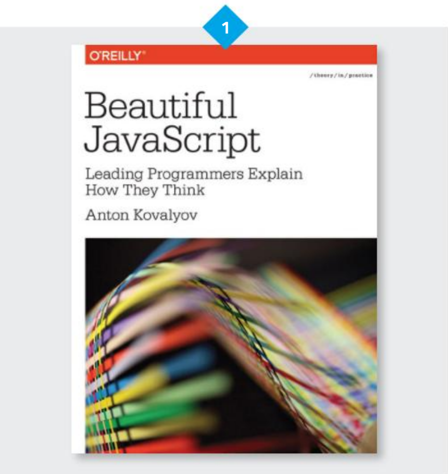
Jess (@caddickyo) is a young, ambitious multi-disciplinary designer. She makes nice things for Green Chameleon, a creative agency in the heart of Bristol

★NEED LIST

STUFF WE WANT

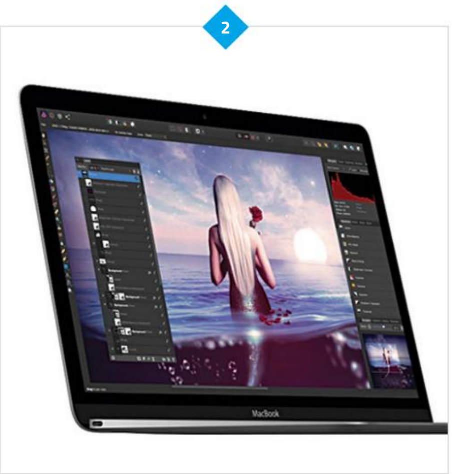
Small objects of web design wonder: from a new piece of photo-editing software to a UX comic book hero

1



BEAUTIFUL JAVASCRIPT $29.99

2



AFFINITY PHOTO £39.99

3

WRITING IN MARKDOWN £2.50

4

UX HERO FREE

5

REAL-LIFE RESPONSIVE WEB DESIGN $39

6

COLOUR THEORY IN WEB UI DESIGN FREE

What we think

(1) Get a better grasp of the whole JavaScript ecosystem with this book that focuses on case studies from top experts (*netm.ag/javascript-272*). **(2)** The long-awaited Affinity software for Mac is here, packed with powerful photo-editing tools and a workflow focus (*netm.ag/photo-272*). **(3)** Armed with this guide, you can master Markdown to write documents faster and more efficiently (*netm.ag/markdown-272*). **(4)** The importance of UX is brought to life in this comic, which features a UX team as the heroes (*netm.ag/uxhero-272*). **(5)** Conquer the tricky challenges posed by responsive web design in this expert guide (*netm.ag/responsive-272*). **(6)** This book gives you a practical overview of colour theory and how to use it to inject some excitement into your designs (*netm.ag/colortheory-272*).

NEXT MONTH

SWITCH FROM PHOTOSHOP TO SKETCH

We compare the best alternatives to Photoshop for web and UI design, and help you make the transition

PLUS

Top ways to build sites with responsive images

Create slick SVG animations with GSAP

Live-code sites with Chrome Developer Tools

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net.creativebloq.com

Photography: Matthew Bergman (*@fotoverite*)

CASCADIAFEST

The conference formerly known as CascadiaJS grew broader, bolder and badder this year. **Marcy Sutton** reports

* EVENT REPORT

DATE: 8-10 JULY 2015
LOCATION: SEMIAHMOO RESORT, US
URL: *2015.cascadiajs.com*

The Pacific Northwest conference CascadiaJS grew into something new and amazing this year: a three-day web conference now called CascadiaFest. Following the JSFest format (*jsfest.com*), the 34 talks and six free workshops were grouped into server and browser JavaScript days, along with a brand-new CSS day.

As Northwest native, I love the message sent out by CascadiaFest: common themes reflect the community's values. Speakers talk about compelling side projects and their learning process in working on them, admitting vulnerability. They enlighten us about being polite citizens in open source and beyond, elevating our skills and investing in our careers and communities.

This year, three curators selected talks blending technical and human insights, resulting in topics as diverse as CSS fractals (*netm.ag/cssfractals-272*), code galaxies in WebGL (*netm.ag/codegalaxies-272*), ES6 and teaching beginners (*netm.ag/es6-272*), JavaScript framework fatigue (*netm.ag/frameworkfatigue-272*), culture hacking (*netm.ag/culturehacking-272*) and command-line tooling.

Several speakers debuted at the show, after making it through the highly competitive call for papers.

I am proud to have been one of three female MCs this year, and thanks to a close friend in the community, was able to pull off nine costume changes including a full-size bear, a Canadian Mountie and a Batman onesie. CascadiaFest was the perfect place to be silly, make friends and learn a ton at the same time.

Real-time captioning also made its debut at the conference, providing the hard of hearing and those following at home with a livestream of every talk. It's great to see this happening more at mainstream conferences (Hey, other organisers! You can provide live captioning too!). The videos can be found at *netm.ag/cascadiafestvideos-272*.

Next year will be the fifth edition of the show, most likely in Vancouver. I highly recommend submitting a topic into the CFP (if that's your thing), booking a plane or train ticket, and coming to see how we do things in the Pacific Northwest.

* PROFILE

Marcy (@marcysutton) is an accessibility engineer at Adobe and an AngularJS core team member. She co-organises the Seattle chapter of Girl Develop It

EVENT GUIDE

GENERATE LONDON

DATE: 17–18 SEPT
LOCATION: LONDON, UK

net's conference is in its third year and just keeps getting better. This year, speakers include Sara Soueidan (for her first-ever UK talk), Verne Ho and Eric Meyer. It will be followed by the annual **net** awards – grab both tickets together for a special discount.
generateconf.com/london-2015

&YETCONF

DATE: 6-8 OCT
LOCATION: WASHINGTON, US

For those that agree "the status quo isn't good enough", &yet offers a look at the intersection of technology with humanity and ethics. This is a gathering for people who care about community and believe the world should be a better place.
andyetconf.com

CSS DEV CONF

DATE: 26–28 OCT
LOCATION: LONG BEACH, US

CSS Dev Conf travels to The Queen Mary in Long Beach, California for its fourth year. Look out for the likes of Val Head, Jina Bolton and Jonathan Snook sharing their expertise.
2015.cssdevconf.com

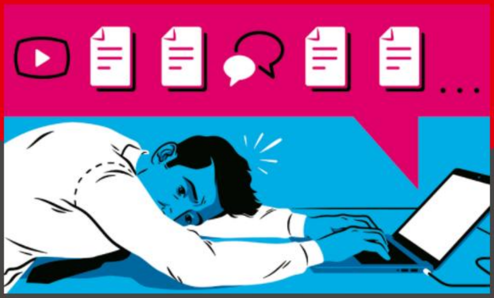
BYTESCONF

DATE: 29 OCT
LOCATION: BRIGHTON, UK

Bytes is an affordable one-day mini-conference to raise money for charity. Speakers include Clearleft's Charlotte Jackson, Liquid Light's Will Chidlow and 2013 **net** Young Designer of the Year Dan Edwards.
bytesconf.co.uk

VOICES

Opinions, thoughts & advice



* PROCESS

THE NEW DESIGN SPRINT

Dávid Udvardy explains how Skyscanner adapted Google's five-day design sprint for complete product development projects

Google Ventures' five-day design sprint (*netm.ag/sprint-272*) is a method of assessing startups and product ideas in just, well, five days. Your startuppers drop in on Monday to introduce their business, you come up with some alternative solutions on Tuesday, decide on one via some fierce discussions on Wednesday, rush to your favourite prototyping tool on Thursday, so by Friday you are (supposedly) ready for some real humans to come and tear your concepts apart. You spend the weekend recovering.

At Skyscanner, we were so fascinated by the seemingly contradicting idea of strict constraints applied to creative processes that we decided to try and transform the five-day sprint. We wanted to develop a version that supports complete product discoveries, typically lasting several months.

A SPRINT OR A MARATHON?

The most important benefit of the sprint is that it sets clear boundaries for the individuals and enables the team to work in synergy. Applying self-judgement and killing ideas too early can prevent the birth of enough directions. Truly great product ideas come from connecting seemingly unrelated thoughts via elegant shortcuts, which are easier found by trying many things. On the other hand, when it comes to killing ideas, everyone needs to become the worst critic so only the best ideas survive.

The sprint promises both creativity and output. Obviously GV5 was never meant to be used for extended periods, so we had to change a few things.

TRUST IN THE PROCESS

The sprint has an overwhelming number of rules, and not everyone will feel comfortable with those. Results coming in slowly will test your patience, and charismatic leaders will start pushing the team towards decision-making too early, limiting the number of alternatives discovered. You need to trust that there is a solution out there; you just need to stick to the schedule.

INTRODUCE JOB STORIES

We wanted to make the results of research more actionable and inspiring, so we got rid of personas and user stories, and replaced them with job stories. A user story frequently couples implementation with motivation and outcome, prescribing a certain solution. On the other hand, a job story focuses on situation, motivation and expected outcome. It is easier to expand to apply it to unexpected situations.

COLLABORATE

In order to make the process more robust and remove dependency on the team members' skills, collaboration is largely missing from the original sprint. However, as an established product team, you are more likely to have a track record of successful teamwork. We introduced a few sharing sessions into the process. Reviewing the same topic iteratively does the natural selection: the group will lean towards the best ideas and perfect them. These will also make decisions a lot easier.

We introduced a few sharing sessions. Reviewing the same topic iteratively does the natural selection: the group will lean towards the best ideas

AVOID BURNOUT

To avoid burnout, we used Edward de Bono's lateral thinking (*netm.ag/bono-272*), which infused new energy into the brainstorming. Introducing 'delight sprints' – tackling such crazy ideas as 'what if the defining shape of the digital world were the circle instead of the rectangle?' – after every few feature sprints helped us recharge, too.

We had to adjust each part's length a bit. As we were focusing on just a feature in each sprint rather than an entirely new product, we could decrease the research part (first day). Having a dedicated researcher in your team can make up for the limited time. As we were aiming for depth, we needed more time generating ideas (second day), building them (third day) and refining by iterating. Luckily an established team makes decisions a lot quicker, so we could save some time there. The result is an eight-day long sprint, but with smart overlapping we could still start every sprint on Monday.

DEDICATE A WAR ROOM

We squatted in the same meeting room for months, building up a visual history of our adventures on the walls. It made introducing the project or getting a status report a lot easier. It also acted as a recruiting tool to lure new members in.

I would be happy to help or hear about your experience if you decide to adopt our sprint method.

* PROFILE
Dávid is a lead designer at Skyscanner (*skyscanner.net*), where he works on the mobile travel apps

CULTURE

THE FUTURE OF CONTENT MANAGEMENT

Illustration by Ben Mounsey

What will tomorrow's online content look like, and how will we go about managing it? **Angus Edwardson** explores three key strategies

By the end of the decade there will be 10 times as many connected, content-serving devices on earth as there are humans. This puts a lot of pressure on those of us in the business of serving content. How do we make sure the stuff we're putting out there actually means something to our users?

This article outlines three areas we're struggling to keep up with when it comes to content management:

- **Design**: With 'content' work requiring more design thinking, the way we organise sites is changing
- **Production**: It can be tricky to get traditional content teams to produce semantically marked-up content
- **Maintenance**: How do we actually maintain today's omni-channel, adaptive creations?

By highlighting some successful experiments in each of these areas, we can suggest best practices for spending our time and money on managing 'future content'.

DESIGN

The UK government now employs 15 content designers: people that have been specifically trained to think of content in terms of meeting users' needs. Meanwhile conferences dedicated to 'design and content' are popping up, as are resources about how designers and content people can create better digital experiences together.

This blurring of responsibilities can be hard for agencies, which have to adapt to selling frameworks for content production, rather than simple websites. It can be even harder for larger organisations to establish cross-disciplinary teams with the spectrum of skills required.

One possible solution is illustrated by the charity Cancer Research UK, which exploits user journeys to get everyone involved in prototyping with content. This is a great example of a cross-organisational design process that puts content first. Real nurses draft content for each touchpoint in the journey, then real editors review it, after which it is pushed into a hosted HTML prototype.

Benefits to this process include:

- By tying everything back to a user journey, we have a clear focus, and a measure of success and failure
- There's no Lorem Ipsum. Because real content is used, we can go beyond checking whether users can navigate a layout and test whether people understand what is being communicated; to see if their questions are being answered, and their needs met
- At the end, we have a skeleton of the technical infrastructure needed, including content production tools, the CMS and a visual style guide
- It is a prototype of the building process. This makes it valuable when it comes to estimating the time required to scale up to thousands of user journeys. It's easy to underestimate how long approval will take

This final point leads us on to one of the biggest challenges we face when it comes to content …

PRODUCTION

Since our devices are increasingly aware of their context, location, and the person they are serving information to, there are huge opportunities for personalised experiences. To make this happen, we need some level of 'intelligent content'. Over the past four years, Adobe and Sitecore have seen 106 per cent and 35 per cent year-on-year growth in their respective content-personalisation CMSs. But is everyone ready for these tools?

The story goes:

- Marketing manager sees a conference talk about the wonders of personalisation
- "That looks cool. Let's get one of those"
- Agency builds it
- What now? We have a beast we can't control
- Firm uses about 2 per cent of a very expensive CMS

One solution to this problem is exemplified by British conservation body the National Trust, which is currently testing advanced personalisation in Adobe Experience Manager. Its aims go as far as customising emails and landing pages to reference specific objects, in specific sites, based on a user's previous visit.

Let's consider this in the scale of their organisation. The National Trust owns over 200 properties, each of which is managed by a separate team. Each team has its own marketing manager, who has their own digital content to manage.

To find a solution that worked for all of these content creators, the organisation hired a team of specialists, including three information architects, two content strategists, a data scientist, four UX designers and two product managers. It started by breaking the National Trust's area of operations into smaller regions and performed tests in each one to establish the best way of creating content on an ongoing basis. It then came up with a training plan to educate everyone involved.

But what happens if you don't have the resources to hire a 'SWAT team' of specialists like this? In the next section, we'll explore an alternate strategy.

> Since our devices are increasingly aware of their context, location, and who they are serving information to, there are huge opportunities for personalised experiences. To make this happen, we need some level of 'intelligent content'

MAINTENANCE

The final major challenge of modern content management is keeping it up to date. With models that separate producers from publishers and consumers, it can be very hard to close the loop.

Tourism Australia takes a different approach to adapting its organisation to the creation of structured content: one that also makes that content easy to update. It has abstracted the publishing tools away from the submission of content, giving contributors plain text forms to fill in with forced validation for images and assets. This isn't as robotic as it sounds, as the fields in the form are surrounded by tone of voice guidelines and examples of how to write well for the medium.

The result is a database of content that is totally devoid of form and can be pushed out and published anywhere. Create once, publish everywhere. This model also works well when you don't have the resources for training and education.

ANY OTHER BUSINESS?

Now is an exciting time to be working with content. It's being invested in at an incredible rate, and is expanding into some incredible areas.

For a start, we hear rumours that 90 per cent of the world's content was created in the past two years – and that volume is set to increase by 500 per cent in the next decade. We need to keep exploring how we can manage all that data effectively.

Meanwhile, the forms in which content must be produced are changing. Mobile technologies like Spritz and personalised news-delivery services such as Vox Sentences suggest a growing demand for information efficiency, while the Apple Watch and other micro-devices put pressure on information creators to create content in more compressed – or at least, more translatable – forms, regardless of personalisation.

In both cases, best practices are still being established: a process in which we, as content professionals, can all play our parts. Hopefully, the strategies we've outlined here will give you a head-start when it comes to creating future-friendly content.

* PROFILE

Angus (@namshee) is the product director at GatherContent, where he spends his time developing the content processes of various global organisations

*USER RESEARCH

TESTING WITH CHILDREN

Trine Falbe looks at the challenges of involving children in the design process

If there is one thing I've realised over the past years working with kids and digital things in combination, it's that kids are the most unpredictable user group I've ever come across. They are goofy, playful and have a very short attention span. Their intuition drives them, and they often shift focus. These things mean you need to take a specific approach when testing with this user group.

I've found it incredibly useful to adopt an ethnographic approach. Put simply, ethnographic research means observing people in a natural setting and describing what they do. This can result in many different types of data – for instance user portraits and patterns of behaviour.

Ethnographic research works particularly well with kids because they have such different mindsets to adults. Their playfulness is hard to capture with more structured research methods. If there is one thing to keep in mind when planning to involve kids it is this: you cannot plan much, and the plans you make will most likely fail.

FLY ON THE WALL

This means you have to do a few things differently. For one, loosen the structure. Secondly, use a video camera to record your observations. Kids will jump from here to there in a split second, so it is impossible to document your data at the level of detail you need if you don't use a video camera.

I recently did a study with a bunch of kids to map their practice patterns when using the web through computers. Ultimately, the aim was to create a set of design principles for making web stuff for kids.

My observations took place in an after school care group and in a class with a third grade – both settings were natural and on-site, which is crucial. I planned by simply writing down a few interview questions ("Do you use a computer? For what? Do you use a tablet? For what?"). Other than that, my goal was to simply video record the kids while they were using the computers.

Because there is no way you can get a group of kids to do a structured walk-through for you, instead of asking them to "show me what you do" (a common ethnographic observation approach), I acted like a fly on the wall.

I went home with 60 minutes of raw footage, which gave me incredible insight on how the kids actually used computers and the challenges it represented. In never would have gained such insights if I had simply interviewed the kids or done usability test-type sessions with them.

THINKING ALOUD

Another common way of involving users in the design process is by doing usability testing 'think aloud' sessions. Again, doing this with kids is a different world. I learnt this the hard way: the first time I did a usability test with two kids, my plans simply failed because the kids were really bad at thinking aloud. They were also bad at following instruction, so they simply didn't work with the tasks I had set. I didn't video record the sessions, which turned out to be a bad idea, too.

I learnt that you have to let the kids play with the interface and probe them along the way if you want them to test something specific (e.g. "Try to use X feature on this page"). I also realised it was a good idea to have them test the interface twice, mainly because they are so fast and spontaneous in the way they interact. Testing twice gave me a chance to observe in more detail.

My point is that when you work with kids, you can't plan too much; you have to follow their lead and see where it takes you. And you have to video record your research so you have material to analyse afterwards.

Forget about keeping a tight structure – jump on the train and see where it leads you. And don't forget your video camera.

*PROFILE
Denmark-based Trine (*trinefalbe.com*) has been working with the web since 2001. She is a senior lecturer and UX consultant, and has spoken at various conferences in Europe

KRYSTYN HEIDE

Words by Julia Sagar **Photography by** Daniel Byrne

Squarespace's second-ever employee talks about dumping Adobe, embracing modular design and her ongoing quest to identify dead monkeys

INFO
job: UX and UI designer
w: *krystynhei.de*
t: @krystynheide

"My first mentor had this saying: 'Don't bring me a dead monkey'. In short: you can't just sit around complaining about things and expect them to get better," states Brooklyn-based designer, developer and UX expert Krystyn Heide. "Successful people are those who identify problems early on, bring solutions to the table, and actively incorporate – and iterate – on those ideas."

It's a philosophy that has punctuated Heide's career, transporting her from fine arts college to a web publishing startup that exploded into businesses and households worldwide, and eventually leading to the establishment of her own studio.

Heide spotted her first dead monkey after starting her first-ever web design job, at the only web development company in town. It was 2003, and she has been becoming increasingly frustrated with Quark and Photoshop. "With web design, and eventually web apps, I found a space where I could make things work and look better – where I had more control over a user's experience, and at the time I think that perspective was very unique."

At the studio Heide had an epiphany. Much of the work was the administration of sites created by the company. Team members were working overtime on an endless queue of revisions, with no time for new business. There was no growth, and the people in the creative department weren't getting a chance to create anything.

"One day, I was working on an ecommerce site – basically an old-school version of Shopify, where you create a product through an interface versus a database, and the software handles the rest. I thought: 'If something like this can manage thousands of products, and handle all these transactions, shouldn't it be easy to create something that can manage a dozen pages on a client's website?'"

The idea led Heide to Squarespace, an all-in-one web publishing solution created by entrepreneur Anthony Casalena in 2004. Hooked by the intuitive interface and simple markup – and with no proprietary language or complex stylesheets to override – she quickly saw the commercial benefits.

"Using a CMS would free us up to go after new work, and maybe get some interesting projects to increase morale in the creative team," she explains. "Unfortunately, my boss didn't see it the same way. I think the idea

terrified him. If clients could do their own edits, how was he going to make money?"

Undeterred, Heide began tinkering with Squarespace templates in her own time. Casalena noticed, offered her some side projects and, soon afterwards, a full-time job at the company. She was Squarespace's second-ever employee.

PATTERNS AND USERS

In the past 11 years Squarespace has scaled dramatically to over 500 employees, taking on behemoth competitors like WordPress to become the first choice for hundreds of thousands of layman developers. So what was life like as an early employee?

"Working with Anthony was a delightful contrast to my previous job," says Heide. "His impetus for creating Squarespace was that he was simply dissatisfied with the process of creating a personal site. He identified a problem, and rather than just capitalising on it, he wanted the solution to be a platform he would enjoy using himself."

In the beginning, Heide worked on customer templates and the company website. Using the product as a customer gave her a unique insight into which new features would benefit all customers, and which were one-off requests not worth implementing platform-wide.

When Casalena began prototyping Squarespace 6, Heide moved to strictly working on templates for the new platform. Researching new user types required the designer to step up her efforts to balance analysis with creativity. "I'm incredibly user-focused," she explains. "The left side of my brain is always scoping out patterns and common practices."

Heide's Eatery design, which evolved into Squarespace's stunning Pacific template, is a case in point. Tasked with designing a template for restaurants, Heide quickly realised that many were offering "terrible" online experiences, with homepage animations, Flash navigation and outdated PDF menus. She also found such sites were rarely updated with any frequency ("Likely because Flash and PDF aren't revision-friendly," she reasons).

> "With web design, and eventually web apps, I found a space where I had more control over a user's experience"

Her solution was twofold. First, create a template that prominently displays the most requested information on the landing page; and second, make it easy to create and update. Eventually, Heide arrived at a long-scrolling page layout. However, it would require some hefty changes.

"The homepage required backend work and a new, potentially disorienting flow for the user. When I presented it to CCO David Lee and Anthony, I was so worried I set it up as: 'You'll probably think this is too out there …' and had a backup just in case."

Lee and Casalena liked it, though, and the final template launched in June 2014. Featuring content overlays, section-specific background images, full-width galleries and single-page indexes, the template showcases imagery in all its full-bleed glory and, says Heide, was worth the extra work.

MONEY TALKS

Squarespace's meteoric growth initially occurred without outside capital. "It was subscription-based (and profitable) from the beginning. We could grow our team – and scale the product – inline with revenue. Other than a small seed investment from Anthony's dad in 2004, the company didn't take any outside money until 2010," explains Heide. "Our Series A was $38.5 million, which is incredibly high for a first round."

But transforming from startup mode to an established company can take a mental toll on employees. Negotiating the pressures of rapid innovation, with evolving processes and changing job roles, takes a certain type of character, and Heide's spoken previously about having to occasionally step out of the room to breathe.

"When a company gets money, when you get press that indicates you're a big deal now, some people get … political," she adds. "It's really hard to collaborate with people who are pulling rank and telling you what to do, especially when you have a hunch that they're wrong."

One of the biggest lessons she learned at Squarespace was efficiency. "Half of what I did was right – sprints, product specs, user testing and so on – and the other half was a process that I had made up and was completely inefficient," she says. "Like spending hours designing and coding details that only other designers could really appreciate."

Heide left Squarespace in 2013 after a successful seven-year tenure. A series of events contributed to the decision, one being a chance meeting with education enthusiast Mike Karnjanaprakorn, who was in the early stages of building online learning community Skillshare.

"We talked over coffee about the flaws in traditional education, and his experiences in collaborative, project-based courses at VCU. He wanted to create a platform where anyone could teach and anyone could learn. He wasn't ready to hire people yet, but I told him to get in touch when he was."

In-between this conversion and Heide's eventual departure from Squarespace, her sister-in-law committed suicide. "To say that experience made me question my entire life is an understatement. I'd poured seven years into a business that wasn't my own, I'd missed moments in my children's lives that I'd never experience again, and I'd lost touch with most of my remote family, like she had," she says.

"I knew I had a lot of work to do on myself, and when I returned to work it was too soon. I was an observer more than a participant. David and several new designers were cranking out incredible work. I felt like I would be leaving the company in the hands of people who would do far better work than I ever did. I knew it was the right time to leave."

Since Squarespace – and following a period of soul-searching – Heide's been busy. She's collaborated with design firm Undercurrent and American Express, and spent around a year working with Skillshare. When we catch up with her she's just wrapped up a few projects for career site Levo.

SQUAD LIFE

User experience and process remain central to her practice. For Heide, it's all about ownership. She's a fan of Spotify's approach, in which 'squads' of designers and developers operate like mini-startups.

"I had a lot of work to do on myself, and when I returned to work I was an observer more than a participant"

"The slowest and most tedious part of UX/UI is research and metrics, but in a squad, the interface designer lives and breathes that specific audience or user type. They become the user's champion, and deliver the best designs, because they know who is using them and how. Skillshare and Squarespace both successfully adopted this philosophy in different ways."

Heide is also big on modular design. A large site, she says – especially one like Skillshare that combines a company site with a user interface – has a lot of pages and flows that people bounce in and out of. Keeping things consistent helps users find their way around.

"And it facilitates rapid development," she continues. "A designer can skip a mockup altogether and say, 'Let's use this template for the page, this video module, this three-column user module, and these aspects from the style guide.'"

A few months ago, Heide spotted yet another dead monkey, this time in her own creative arsenal. "I just dumped Adobe completely!" she announces, adding that her primary tools are now Sketch, Affinity Photo and Sublime. "My annual $600 renewal was coming up, and I realised I was only using Photoshop. Then someone tweeted about Affinity Photo, and I gave it a spin. My computer runs so much faster now, and I'm saving a ton of money."

Of course, no matter how many new tools launch on to the market, there are some things that can't be replicated. "Nothing beats the smell of a well-worn sketchpad and the sound of sharpening a pencil," smiles Heide. "I always sketch first."

Next month: Creativity evangelist Denise Jacobs shares her thoughts

★ Q&A

JAIMEE NEWBERRY

The UX expert, coach and podcaster on how to bounce back from burnout

INFO

Job: Strategic advisor and UX expert

w: *jaimeejaimee.com*

t: @jaimeejaimee

net: You have a degree in metal sculpture … what drew you to web design?
JN: When I graduated I didn't really want a career in fabrication or production welding, and I was curious about websites and how they were made. My first job out of college was as a production assistant for an awesome little film and video company in the San Francisco Bay area. I had a lot of down-time so I taught myself how to code and design websites using BBEdit and Photoshop. I was immediately in love.

net: Do you find that you can be as artistic and creative working in user experience?
JN: Absolutely. It's definitely a different kind of thing to work with your hands, but I believe creating artwork is similar to design in that it is about creative problem-solving and storytelling. Whether on the visual design or the strategic thinking side of things, I've always found having an artistic background has given me a great strength in offering resourceful and creative solutions for all kinds of challenges.

net: You've worked in UX for over 17 years. How have users' needs changed over the years?
JN: I've worn a lot of different hats. I've seen a lot of change in technology and how humans need and interact with technology and information. Dealing with that, for me, has always been about being obsessively passionate about human behaviour, watching, listening, learning and experimenting.

net: How do you avoid burnout?
JN: I'm not sure burnout can be avoided entirely. For me, it happened quite suddenly after the loss of my dad in 2012. It became hard to separate burnout from depression, and maybe from even bigger concerns. Life can really throw some wild curve-balls, but I learned many of the tools and processes I used to design great products could be used to pull myself out of burnout. I could design my life to be what I want it to be, as if it were my product, with focused features and a flexible roadmap. I believe if you're able to stay focused on what is most important to you and are willing to 'throw-down' with your greatest fears, burnout may shake you but it will never own you.

net: You've worked with a wide range of clients. How do you adapt your approach?
JN: I've accumulated a lot of process techniques and tools over the years – there's never a one-size-fits-all solution. I like to think of my toolset as a 'Mary Poppins bag' filled with many years of experience from a really broad range of clients, projects and product types. Different organisations have different needs and goals. It's important to get in and quickly understand the goals and challenges of the organisation. I do this by asking the right questions, listening and learning, so I know what tools make sense for the situation.

net: Why do you think accessibility is still behind with the most basic of services?
JN: I think accessibility for the general population is often viewed as 'nice to have' but not a requirement. If more companies approached problem-solving around universal accessibility as a requirement, they'd meet more goals and needs than expected, for a broader spectrum of user. They would push themselves to solve problems in new ways, instead of repeating what others have done. They would force themselves to simplify instead of feature-cram.

net: What are the basics of good app design?
JN: Simplicity, which is often easier said than done. I'm not going to say 'empathy', because if you are a designer and that's not a part of your natural state of being, you might be in the wrong profession!

WORKFLOW

HOW DO YOU MANAGE DEADLINES?

When you're juggling lots of projects, keeping track of your deadlines can be difficult. We asked some experts how they stay on top of things

AMBER WEINBERG

Frontend and WP developer

amberweinberg.com

Deadlines are something I hold as sacred. Know how long something is going to take you and always add an extra week or two to act as a buffer. If something unforeseen comes up, let the client know immediately and never go radio silent on them. Push back if you feel they're holding things up, so if the project does go over time, you can point to specific instances that caused the issue.

HARRY ROBERTS

Consultant frontend architect

csswizardry.com

In the long term, I would take a feature-led, agile approach: instead of delivering 'a website in six months' it would be 'delivering X feature in two weeks'. This allows us to stay focused but also lets us reprioritise deliverables as we go.

In the short term, I like to take a fairly just-in-time approach to workloads. It's a case of crossing each bridge only as and when we come to it.

REBECCA MURPHEY

Senior software engineer

rmurphey.com

I 'grew up' in the newspaper business, working on the night copy desk at a small publication for five years. There were deadlines every day, every night, every week – that is, they were a way of life. I learned then that managing those demands requires us to keep a constant eye on the big picture: understanding all the pieces that are going to have to fall into place in order to be successful, and being aware of – and making decisions about – tradeoffs among those pieces that allow us to meet the deadline. It also requires us to be prepared for surprises, and willing to stand firm when getting it right is more important than meeting a deadline.

PAUL WYATT

Writer and filmmaker

paulwyatt.co.uk

We can be our own worst enemies when we're trying to get stuff done. Knowing how much you can realistically accomplish in a day is a good benchmark, especially if you work for yourself. There's a danger of work falling behind and one deadline running into another if you don't know your own limits. Things in the real world always take longer than you expect, so give yourself more breathing room by being realistic in what you can deliver and when. If you need more help, time or resources to achieve that, then ask for it.

RACHEL ANDREW

Web developer

rachelandrew.co.uk

I always set my own deadline a few days earlier than the official one. This gives me some breathing room in my schedule if an emergency occurs, without me missing a deadline that might cause problems for someone else. I use OmniFocus, a task management platform that highlights tasks as their deadline approaches. I take deadlines seriously and try not to miss them. If that does happen, I contact the person who is waiting for the work as soon as I know there will be a problem. It's common courtesy and also means they can plan their work around my late delivery.

BRAD FROST

Web designer

bradfrost.com

I like to visualise the progress I'm making on all the projects I work on (*bradfrost.com/progress*), and that keeps me inspired to keep pushing forward with my deadlines. Between that and keeping my to-do list up to date (I use WorkFlowy with great success), I hit most of my short-term and long-term deadlines.

JESSICA HISCHE

Letterer and illustrator

jessicahische.is/awesome

As I'm just one person (rather than a team) utilising calendars to track upcoming deadlines works great for me. I have several Google calendars set up: one for final deadlines (most pressing/inflexible), one for sketches (pressing, but usually a bit more flexible), one for meetings/phone calls, one for travel/speaking and so on. I share these calendars with my artist rep so he has a handle on my schedule at all times. For task management I usually use the Reminders app, but am always fiddling with better ways to track tasks. Sometimes even just a physical to-do list is best!

FURTHER READING

KEEP CALM

An impending deadline is stressful at the best of times, but if your project is down to the wire it can make you too frightened to work. In this blog post (*netm.ag/stress-272*) design professionals Greig Anderson and Nindy Hardjadinata provide some simple tips to ease your pressure.

3 SIMPLE QUESTIONS

Preparing content for a website can get out of control easily, especially when lots of teams are involved. To keep everyone on track, Sophie Dennis wrote this blog post (*netm.ag/content-272*) which covers how just three questions can often resolve any doubts, and highlight any gaps in your planning.

DITCH YOUR DEADLINES

At team Edgar they've scrapped deadlines altogether. In this blog post (*netm.ag/edgar-272*) they explain how instead they've started using a Kanban flow, which means they deal with one task at a time. Using this method, it's the to-do list which serves as the driving force, rather than the deadline.

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#271 SEPTEMBER 2015

The advent of tech you can wear on your sleeve presents a whole new challenge for designers. We look at how to tackle wearables

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The freelance special: we reveal the pros and cons of going it alone, and share tips for landing big clients

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Val Head shares her secrets for amazing interface animations, and we reveal how to switch from CSS to Sass in WordPress

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Designers share their tips for building a better web. Plus, discover how to optimise your sites for mobile

#268 JUL 2015

We run down the 10 top tools you need to build responsive sites, and introduce the Genesis Framework

#267 JUN 2015

Discover how to plan, build and maintain WordPress themes, and manage large CSS projects with ITCSS

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We present the techniques you need to build your best ever site. Plus, a look at the top 20 emerging design trends

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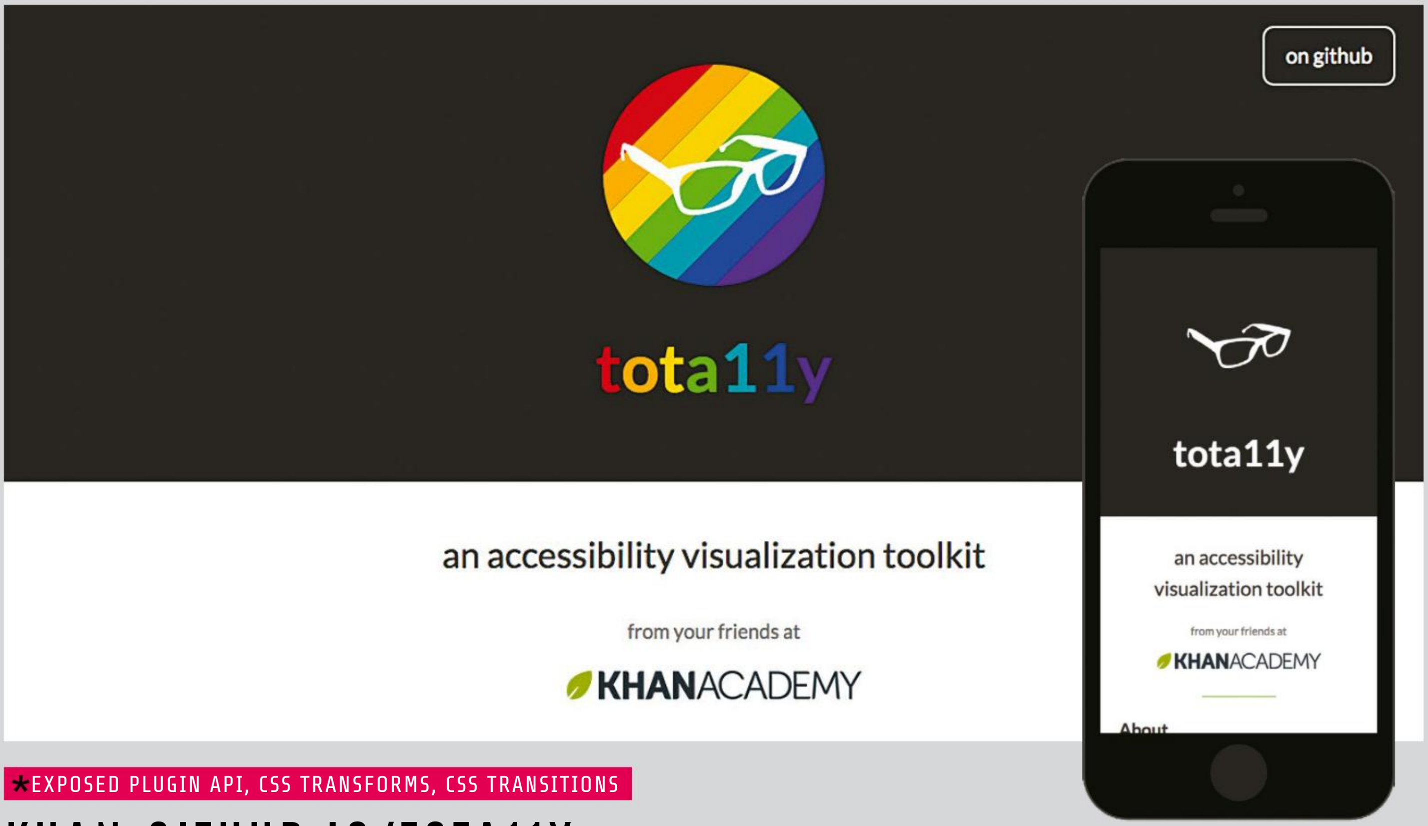
GALLERY

Sensational design and superb development

LYZA DANGER GARDNER

Lyza is co-founder and CTO of Portland-based Cloud Four, where she works with a phenomenal team to take the web into the future
w: *cloudfour.com*
t: @lyzadanger



★EXPOSED PLUGIN API, CSS TRANSFORMS, CSS TRANSITIONS

KHAN.GITHUB.IO/TOTA11Y

Khan Academy *khanacademy.org*

Making accessible websites is critically important. However, the techniques and testing involved often seem like they require deep specialisation that can make web developers and designers feel like they're adrift.

Enter tota11y: a simple tool that can be included as a JavaScript file in a page or, even more simply, used as a bookmarklet on any site. It flags items in the page that run afoul of accessibility guidelines – low visual contrast or missing textual alternatives for images, say.

Wayward elements are flagged visually, making it easy to snap a screen grab and show team members or clients exactly what the issues are, while the expanded explanations coach users on methods to quickly fix the glitches.

Khan Academy's website for tota11y is not overtly glamorous, but then, important work isn't always glitzy. The down-to-business simplicity of the text – both in appearance and in content – belies the complexity of the problem the tool itself aims to alleviate.

> "Tota11y is not just simple and aesthetically appealing, but compelling for its clear solutions for a11y problems you encounter"
> HEYDON PICKERING (@HEYDONWORKS)

*CSS TRANSFORMS, CANVAS ANIMATION, SVG

2015.DCONSTRUCT.ORG

Clearleft *clearleft.com*

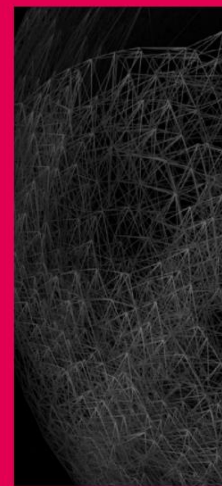
The site for 2015's dConstruct conference in Brighton is a happy place to explore: "part 1920s Metropolis and part 1950s Jetsons," according to Andy Budd at Clearleft. It's sparkly. It animates gently. It's awash with jaunty angles. The colours phase hot, then cool, then hot again as you tour through the content.

Yet it's less than one kilobyte on a primed cache. It scrolls like butter. Web fonts keep the look spunky and stylised, but they're loaded asynchronously for better performance. Under the covers the site's markup has the serenity of a Rothko painting – not surprising, coming from Clearleft, where semantics and HTML craft are forefront.

"The hardest part was getting the diagonals working," says Budd. "Once we'd nailed that, the rest was just tweaking the designs and animations so they worked well across a range of devices."

It's so solid and comfortable in various viewports that, from the receiving end, it doesn't feel pinned to a particular platform, but is at home on a whole lot of them.

> "The site is responsive, fast, and sports an aesthetic that's at once striking *and* welcoming. And those subtle CSS skew transforms are just stunning"
>
> ETHAN MARCOTTE (@BEEP)



SITE OF THE MONTH

THREE.JS, COFFEECOLLIDER, WEB AUDIO

VOID.HI-RES.NET

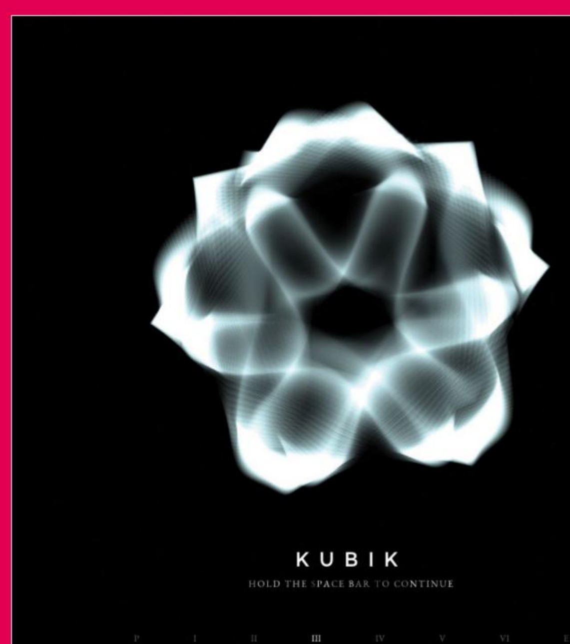
Hi-ReS! *hi-res.net*

"That was beautiful – what the heck just happened?" So you might say to yourself after your first visit to Void, a (predominantly) monochrome, glitchy outer-space meditation that straddles the line between soothing and eerie. London agency Hi-ReS! built the journey by stitching several pre-existing interactive web projects into a tapestry of sound and motion.

Void calls to mind two award-winning and immensely atmospheric iOS games: it has that cosmic aural floatiness of Hemisphere Games' Osmos and the impossible geometries of ustwo's Monument Valley. But this is very much of the web. Three-dimensional effects (which at times feel six- or 10-dimensional) were created using the three.js library, and Web Audio has been pushed to its limits.

Working with Web Audio was "fun and interesting", says Nicholas Salzano, head of production at Hi-ReS! "We used a sound synthesis programming library, CoffeeCollider, to create and distort the sounds for the Hi-ReS! artwork."

As with the experience of, say, watching movies by David Lynch, the best mindset for visiting Void may be one of a non-rigid mindfulness, paying attention without trying to analyse things too concretely. Like a labyrinth or a nautilus shell, this project serves, in Salzano's words, as an "interactive playground", offering us mystery, rhythm and the opportunity to reflect.



"The atypical navigation combined with the sound design and abstract visuals make it a fun and unique experience. It's a happy reminder of how creative we can be on the web"

VAL HEAD (@VLH)

★ WEB FONTS, SVG, MEDIA QUERIES

ILOVETYPOGRAPHY.COM

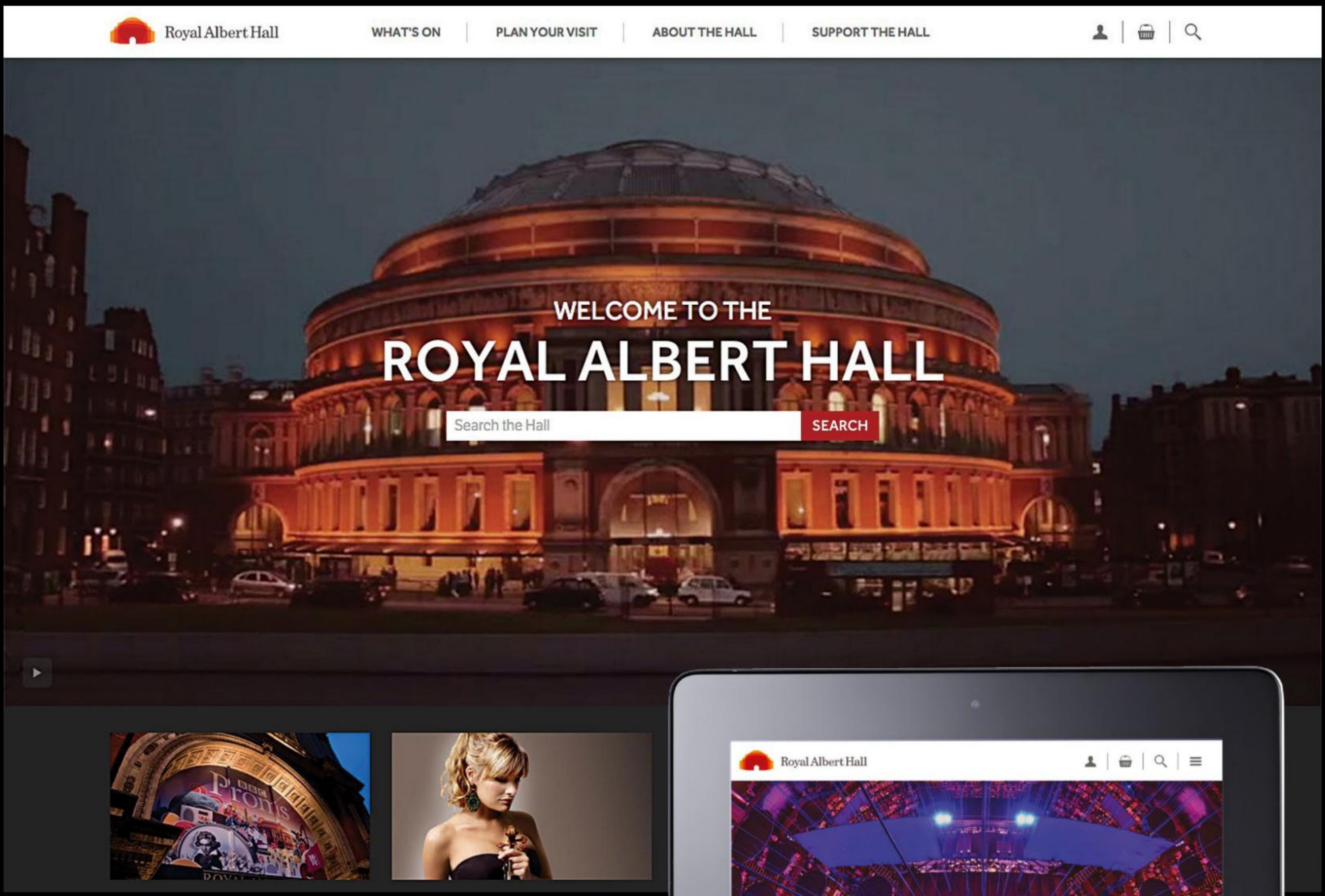
ILT *ilovetypography.com*

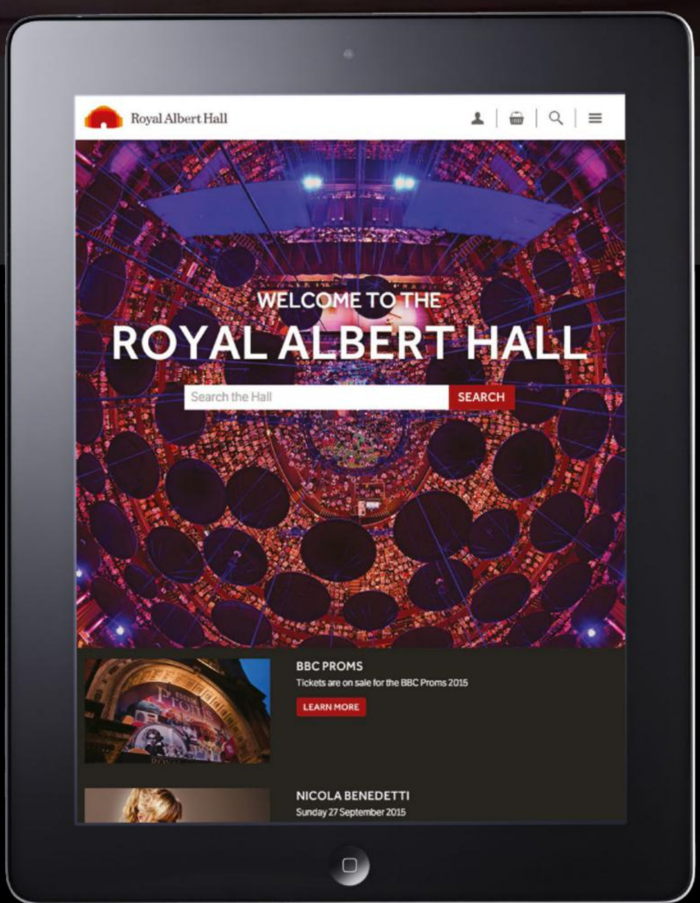
The web and typography pull on one another: the web is all about words and content, yet its myriad variations across platforms and browsers mean our visions of textual design are beset by ever-changing technical realities and constraints.

The recent I Love Typography (ILT) redesign is a nod to both partners: a reaffirmation of the love of type, evolved as the web itself evolves.

John Boardley – who himself is the entirety of ILT – has been doing this for eight years. Over that time, cruft has accrued, but the WordPress-based site now comes with a less hefty payload: Boardley claims the refresh "reduces the amount of code bloat tenfold".

The site now also has responsive layouts and other modernisations, like the use of SVG for font samples. "I've never claimed to be an expert," Boardley says in his blog post about the redesign (*netm.ag/ilt-272*), but his work is a reminder that each of us can, and should, be pushing the web forward.





*SVG ICONS, PICTURE ELEMENT, VIDEO ELEMENTS

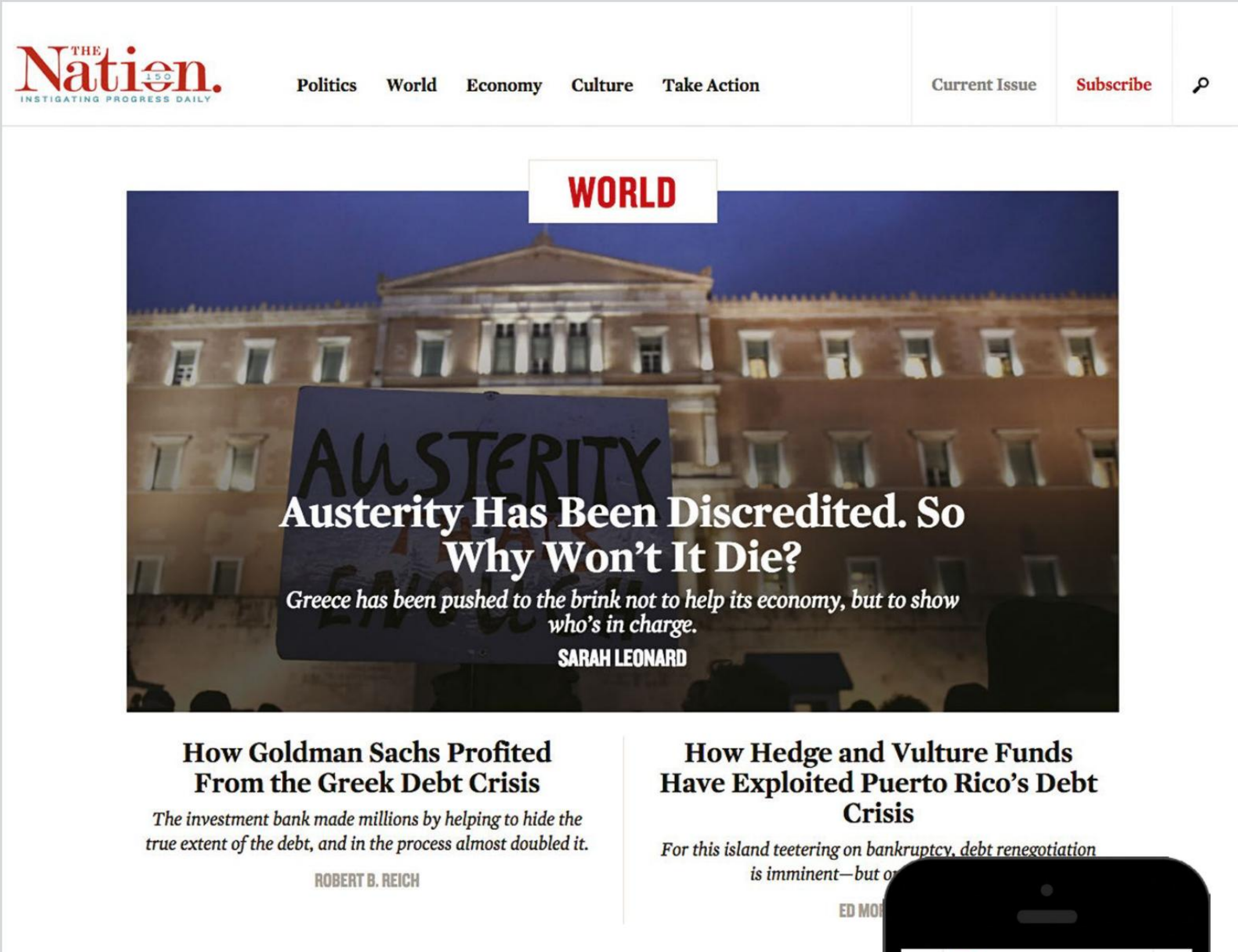
ROYALALBERTHALL.COM

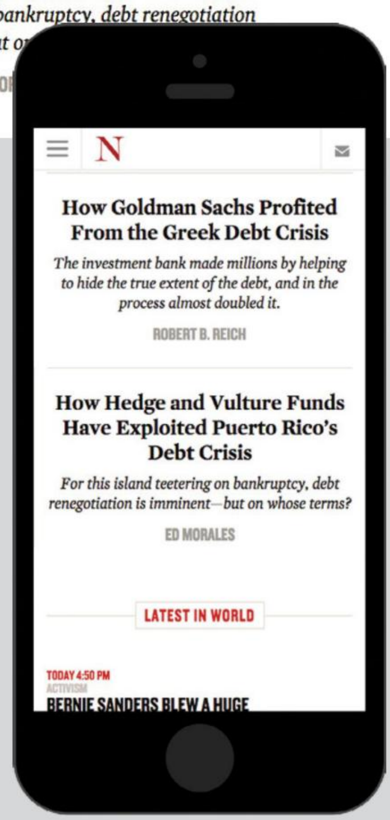
Made Media *mademedia.co.uk*

The new Royal Albert Hall site is responsive across the gamut, but especially so with media, making use of responsive images (using the picture element) as well as progressively enhanced video and SVG icons.

UK agency Made Media spearheaded the project, which features lush images of the hall, combined with crisp typography. Visitors with wider viewports on capable browsers get a full-width video front and centre, in which London traffic and gathering concert-goers subtly flow around the iconic building.

The design is thoughtful even across the sometimes-neglected middle viewport widths, and all layouts share the same bold black-grey-red colour scheme, with snappy contrast.





*WEB FONTS, WORDPRESS

THENATION.COM

Blue State Digital *bluestatedigital.com*

The website for weekly US magazine *The Nation* has been given a big responsive revamp, and it has certainly been noticed. It's one of a growing number of established publications that has faced up to the challenge of modularised content and cross-device chaos.

Blue State Digital – the digital strategy agency known for running Obama's 2008 and 2012 digital action plans – was responsible for pulling off the hefty feat of adapting the deep visual traditions of a 150-year-old magazine for the modern web.

Hoefler & Co.'s Mercury Text is in strong showing here – a font specifically and meticulously crafted for newspapers, with an adapted screen variant. Design nuances echo the brand's words-on-paper roots, with pull quotes and hairline rules providing a cadence reminiscent of print, without feeling contrived or fragile.

The challenges here are numerous: content from many sources, advertising elements, media. But we're seeing a trend in which, increasingly, larger publications are facing these trials boldly, head-on.

★ WEB FONTS, CSS BACKGROUND-FIXED

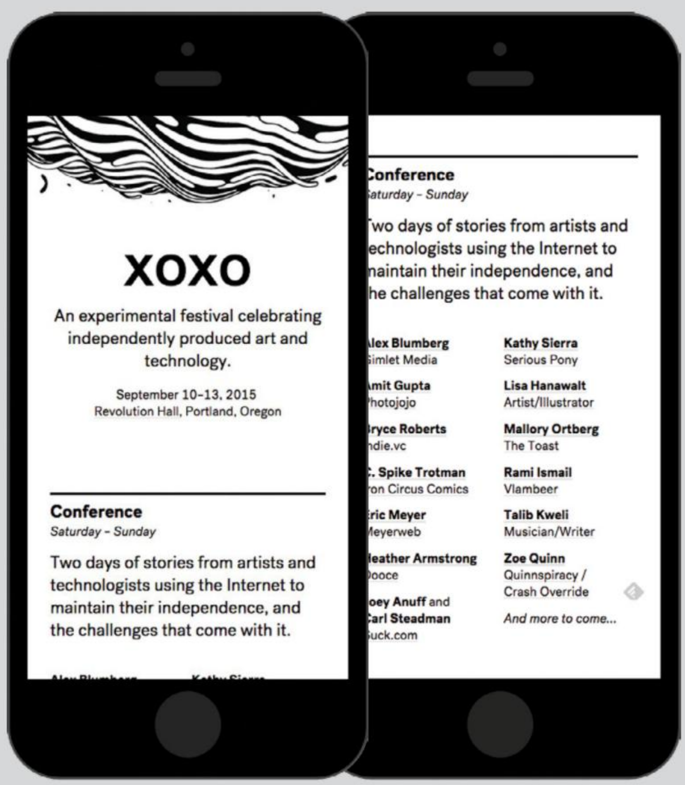
2015.XOXOFEST.COM

Scribble Tone *scribbletone.com*

XOXO's site for its 2015 event doesn't desperately clamour for your attention, but it is emphatically present and evocative. Entirely monochrome, the handsomely proportioned layout is high-contrast but not stark. Everything is arrayed at right angles save for the organic, undulating shapes on the right in wider viewports, which overlay each other as you scroll, like stylised ocean waves or meditative inkblot doodles.

The images by artist Brendan Monroe unfurl, letting the experience "slowly evolve, getting darker and more conflicted as you peeled back each layer", according to Scribble Tone partners Lizy Gershenzon and Travis Kochel.

It's a simple trick, really – just a clever application of fixed background positioning, but the effect is mesmerising and calming. The soft swoops of the images are juxtaposed with the geometric rigour of Josh Finklea's Post Grotesk font in a strongly expressed grid, which flexes and balances rhythmically across different viewport widths.



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SHOW/CASE

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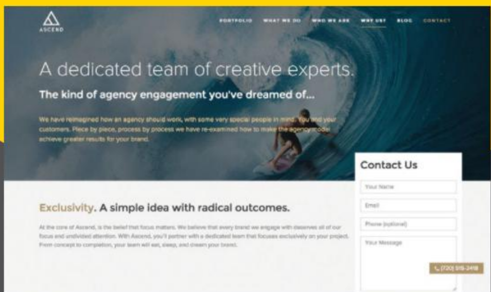
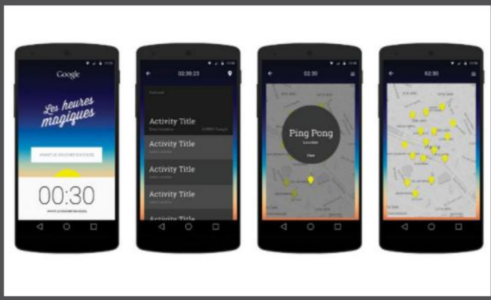
& creative advice

THIS MONTH FEATURING...





DESIGN CHALLENGE

This month...

OUTDOOR HOLIDAYS

* PROFILES

JESS CADDICK

Jess is a multidisciplinary designer working at Green Chameleon in the heart of Bristol
w: *craftedbygc.com* **t:** @CaddickYo

COREY HAGGARD

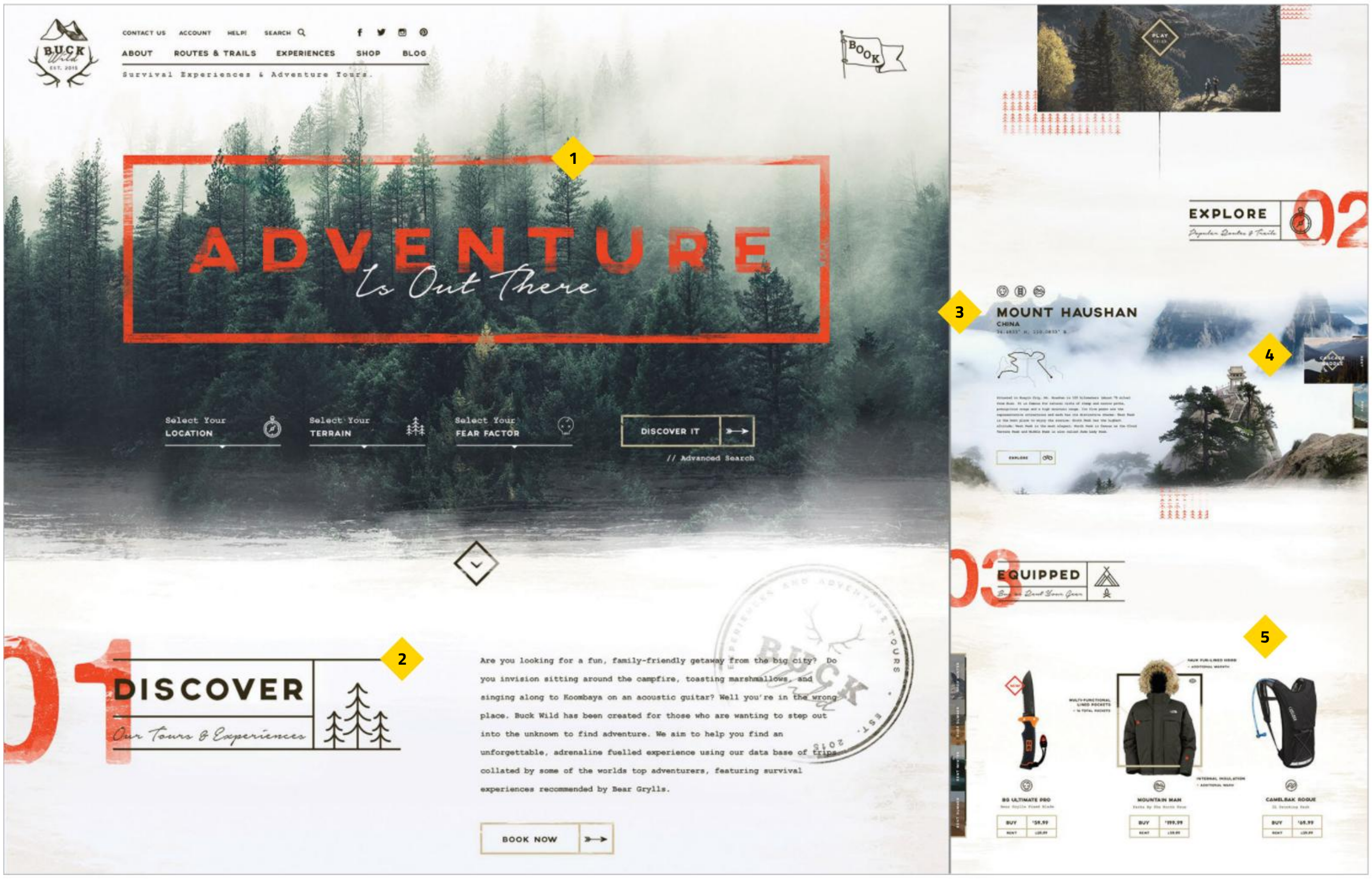
Corey is a product designer based in Atlanta. He owns a design agency called Mossio
w: *coreymade.com* **t**: @coreyhaggard

BRUCE KEAN

Bruce is a web design student, currently setting up as a freelancer
t: @keanonweb

BRIEF

This month we'd like you to design a site for booking outdoor holidays. Think tents, cabins, treehouses – whatever! Take care to think about the booking process, and tailor your descriptions and imagery to entice potential adventurers.



★ JESS CADDICK

BUCK WILD

An outdoor holiday site that encourages people to venture off the grid

Buck Wild is a booking site for survival experiences and adventure tours, aimed at people wanting to step into the unknown. The primary objective is to reflect adventure and wilderness throughout the design. The colour scheme, which mixes bold and neutral shades, was inspired by the contrast of brightly coloured survival gear against wood, mud, sand and dirt. Designing intentionally off the grid echoes an off-grid approach to outdoor travel.

The functionality of the booking process is simple yet bold. It asks the user to specify only three things: location, terrain and fear factor. An adventure is then generated within the parameters of the user's inputs. This information comes from a vast database of trips collated by explorers from around the world. There is, of course, an advanced search option for those who know what they are looking for; but the idea is that you come to Buck Wild to discover something new.

CLOSE UP

(**1**) The layered hero image has a subtle parallax effect applied on the trees, creating impact when the user first lands on the page. (**2**) Titles are drawn in using SVG animation, triggered on scroll to enforce the sensation that the user is in control. (**3**) A 'popular routes' feature includes an expandable 3D route map as well as multiple categories that can be filtered by location, terrain and fear factor. (**4**) An expandable hover state shows an image preview to encourage a click-through. (**5**) The dynamic shop section employs a hover state in which each product is annotated to show its features. Product categories are accompanied by their corresponding location, terrain and fear factor. There's also an option to rent, so anyone can start their adventure.

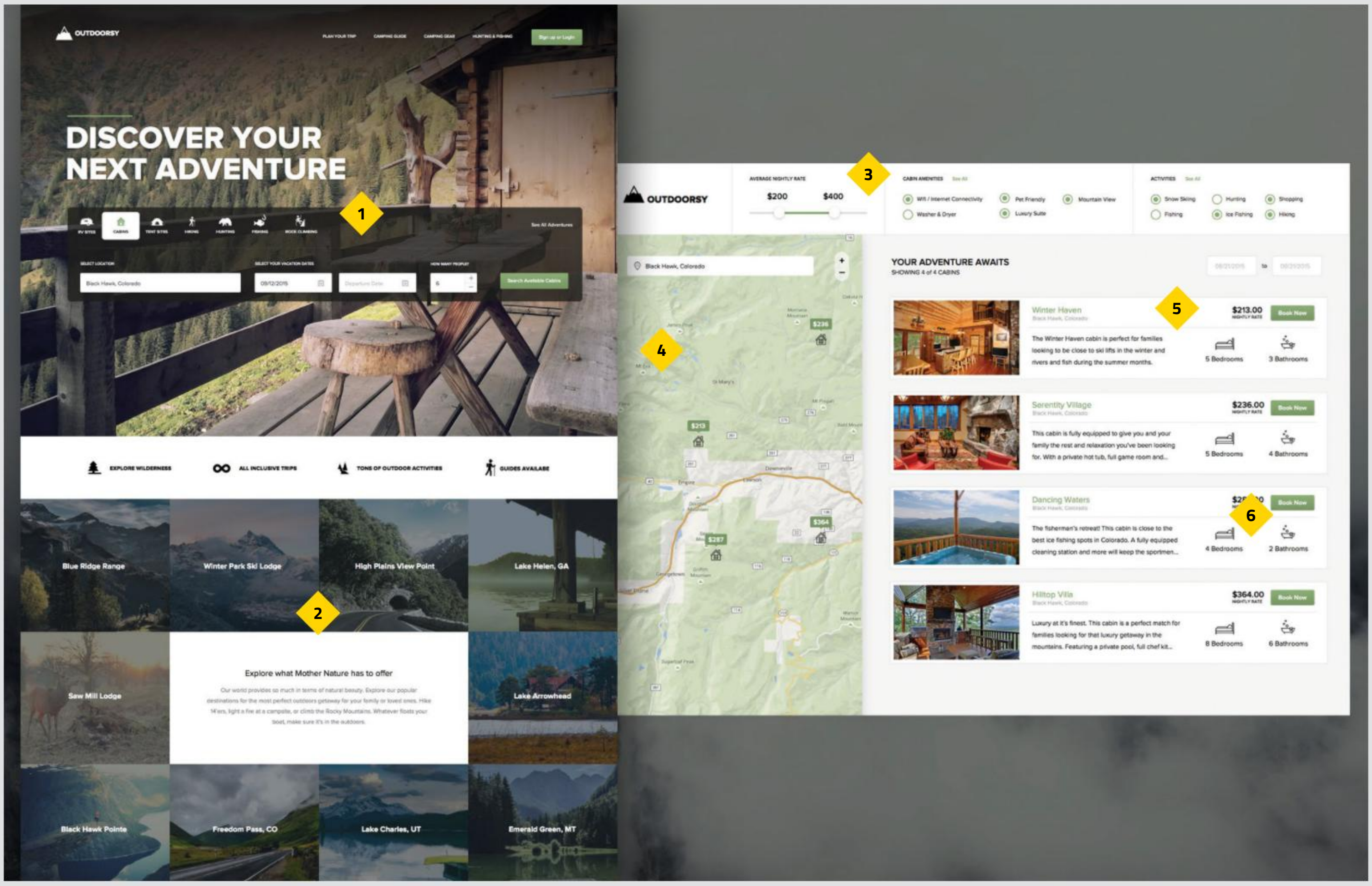
MY MONTH

What have you been doing this month?
Rebranding and designing the packaging for a gin distillery, attending festivals, preparing for a short break in Australia.

Which sites have you visited for inspiration?
Pinterest.com and *Thedieline.com.*

What have you been watching?
Humans, *Adventure Time* and Skillshare classes.

What have you been listening to?
General Levy, Wax Tailor, Chinese Man.



★ COREY HAGGARD

OUTDOORSY

Filters and an interactive map enable users to build their own personal adventure

MY MONTH

What have you been doing this month?
Working to build up the best design team in the world under Mossio!

Which sites have you visited for inspiration?
Pinterest, believe it or not, is great for UI and design inspiration.

What have you been watching?
I don't really watch too much TV. I'm too busy pushing pixels.

What have you been listening to?
Lately I have been really addicted to Big Sean. I don't know why but the dude sparks creativity in me.

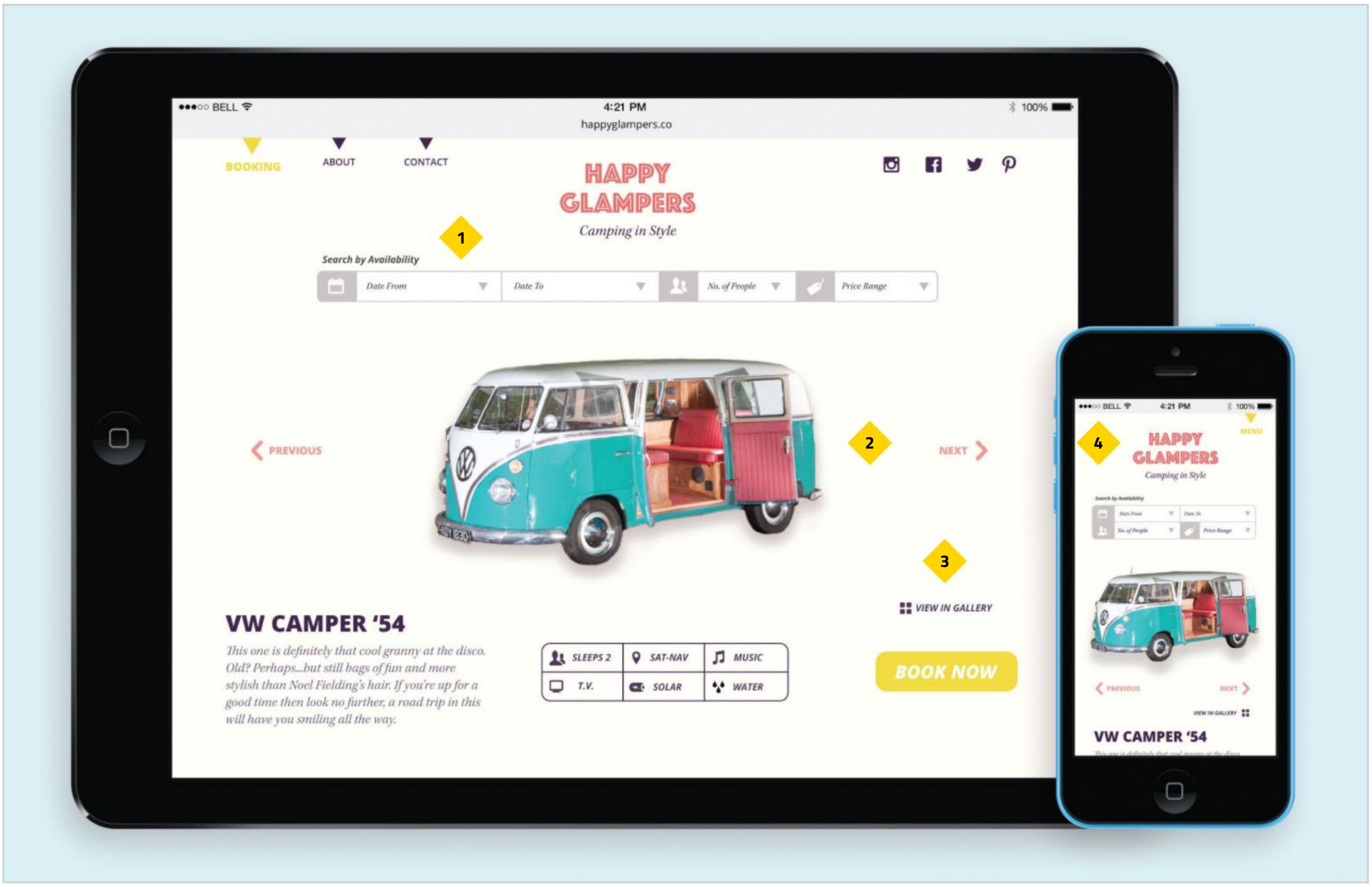
Let's go on an adventure! Outdoorsy is perfect for lodging bookings and outdoor adventures. The site makes finding the perfect outdoor getaway simple, by adding value in filters and making them easily accessible from the start to the end of booking.

I wanted to make the process of booking lodgings really easy, with the adventure aspect provided à la carte. Making the filters within the booking process interactive and accessible was key. The auto-populate filters allow users to quickly change their adventure by moving pricing sliders, selecting which activities they would like to do. Users' actions would automatically filter the results, with no extra clicking required.

A map view introduces an interactive element. Users can zoom out or drag the map to another location and the results will automatically filter for the new area.

CLOSE UP

(**1**) Users can easily select a type of adventure, a location, date ranges and how many people will be in their group. We're only showing the top adventures based on past bookings, but users can click 'See All Adventures', and a fullscreen modal will reveal more options. (**2**) Vibrant imagery gives an overview of the most popular adventures. (**3**) Users can quickly change their adventure with these sliders. (**4**) The map view allows users to explore other adventure options by zooming or dragging. (**5**) A visual indication of the number of rooms and bathrooms immediately gives a good idea of how spacious the cabin is going to be. (**6**) A 'Book now' button enables users to quickly book their adventure so they can start the fun stuff. This would animate to a new view that allows the user to enter specifics such as credit card information and flight details.



★ BRUCE KEAN

HAPPY GLAMPERS

A super-simple site for those who like to keep some creature comforts when they travel

I love the great outdoors. I try to get outside as much as I can, especially since sitting at a computer all day is my life. But if I'm going away for a weekend or a trip, I must admit I like to keep my comforts.

With this in mind I've designed a site for my fellow 'Happy Glampers'. The idea is simple. Rent a cool van and go camping in style – that's it. And so with a simple idea I've created a simple user interface; one that focuses on the most essential details.

First, you can filter the selections based on the dates and details of your trip. This way you know what you're looking at is available to book now. Second, there's an AJAX slider that allows you to flick through images of the vans and compare features. And finally, if you find one you like, you book it. No ungainly tent poles, no mud. Just an awesome van and a fun trip outdoors.

CLOSE UP

(**1**) I wanted to keep the UX as simple and enjoyable as possible, so filtering the search was essential. You simply tell the site a few details about your trip and it will only show you the vans that fit. No disappointments further down the line. (**2**) Again with UX in mind, I wanted to keep as much as possible on one page. An AJAX slider would be used to bring in the new images and information. This way the user doesn't need to navigate to another page until they're ready to book. (**3**) Further images of the vehicle can be viewed in a jQuery lightbox gallery that pops up when the link is clicked. (**4**) Keeping the site simple and easy to navigate on smaller screens was another must. I've kept the focus on the large imagery, and filter options at the top so it's simple for people to swipe through what's available.

MY MONTH

What have you been doing this month?
I'm currently setting up as a freelancer so I've been designing and writing for my soon-to-be portfolio and blog. Watch this space.

Which sites have you visited for inspiration?
Gurafiku and Editorial Design Served.

What have you been watching?
Chef's Table on Netflix. So good! I also went to see *Manglehorn*.

What have you been listening to?
Laura Mvula with the Metropole Orkest, and Jessica Pratt's new album.

FOCUS ON

TYPOGRAPHIC HIERARCHY

Gene Crawford explains how varying the size and treatment of the type on your web page can help readers absorb information

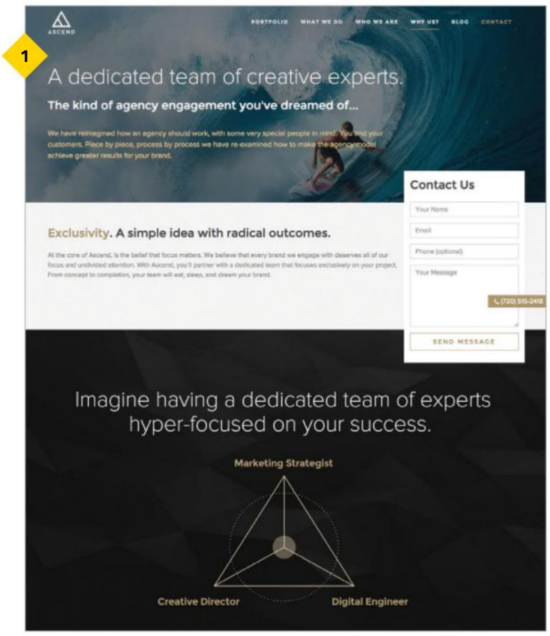
There is an age-old technique in graphic design used to communicate to the viewer or reader the organisation of content and place emphasis on important elements. It's called hierarchy – and specifically visual or typographic hierarchy.

It's employed by graphic designers as a core design tool, and it is essential in making a clearly scannable and readable page, especially when that page features a large amount of content. Hierarchy helps people know where sections start and end, and also enables them to easily skip around the page.

We use some simple signals and cues to help create hierarchy. For example, we denote paragraphs with a line break. Or we use bold or italics to communicate emphasis. Or we might even change the typeface to show difference, like with a section header.

A general rule of thumb is to use no more than two signals or cues at one time. This will help you keep your design solution elegant and not tacky. Like using bold, italic and underline all at the same time – too many signals.

A great way to create a design system is to start with the body copy size, then scale your signals and cues from there. We start with the body copy because it's read the most and forms the base for the design. Next, scale up the type size to approximately 200 per cent for the primary header, then 150 per cent for the secondary header, and so on.



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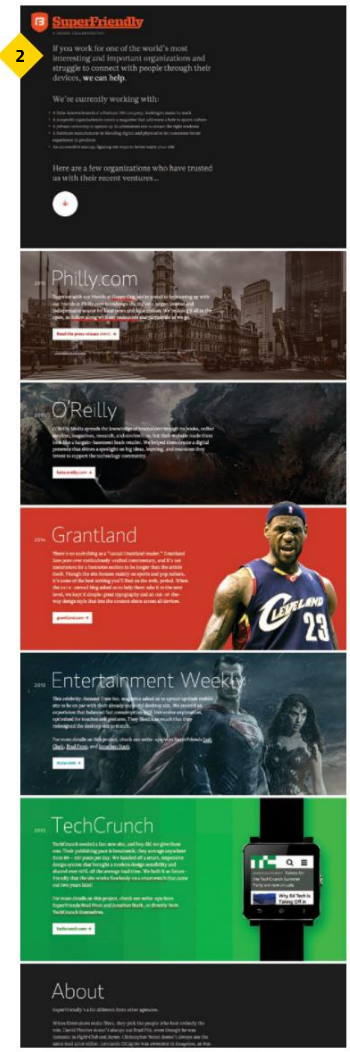

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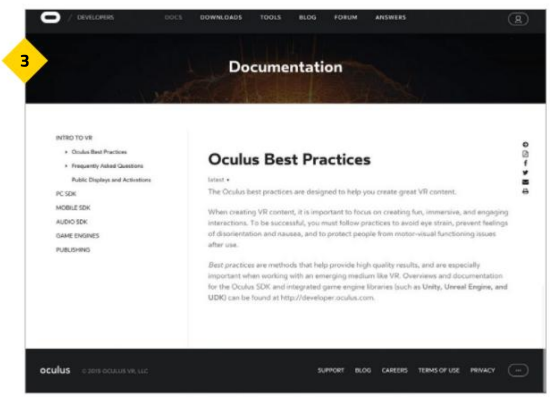


3

(**1**) The Ascend Agency's website (*agencyascend.com/why-us*) has a very varied typographic hierarchy on its content pages. This helps make it very easy for users to scan the page and absorb information. (**2**) The content pages for Oculus' website (*netm.ag/occulus-272*) uses basic signals to display hierarchy very successfully. (**3**) The website for design agency SuperFriendly (*superfriend.ly*) employs a solid typographic hierarchy across all its homepage content. This not only draws users in but also makes it easy for them to scan the page very quickly.

PROFILE

Gene's mission is to work tirelessly to provide inspiration and insight for developers. His recent projects include *unmatchedstyle.com*

INFO

Location: London, UK

Designing since: 2011

Team size: 14

Selected clients: Airbnb, Google, Red Bull, Virgin America, XL Recordings

Awards: D&AD Yellow Pencil, FWA, Awwwards

Open plan Animade at work in the firm's London office, a (longish) stone's throw from Silicon Roundabout

PROFILE

ANIMADE

animade.tv

The UK studio tells us about the creative benefits of life on the boundary of animation and interactive design

From the very start, London-based studio Animade has straddled the divide between making things move, and making things move when you click on them. One founder, Tom Judd, studied animation at the Royal College of Art; the other, James Chambers, studied interactive design. Their complementary skillsets would lead them to create a body of work that ranges from metaphysical black-and-white shorts to colourful interactive avatars for Virgin America, and last year landed the now 14-person studio its first D&AD Pencil.

We caught up with James and Tom to discuss Animade's work, the need to strike a balance between critical and commercial success, and why they believe moving to a remote working setup would spell the death of their creativity.

net: How did Animade get started?

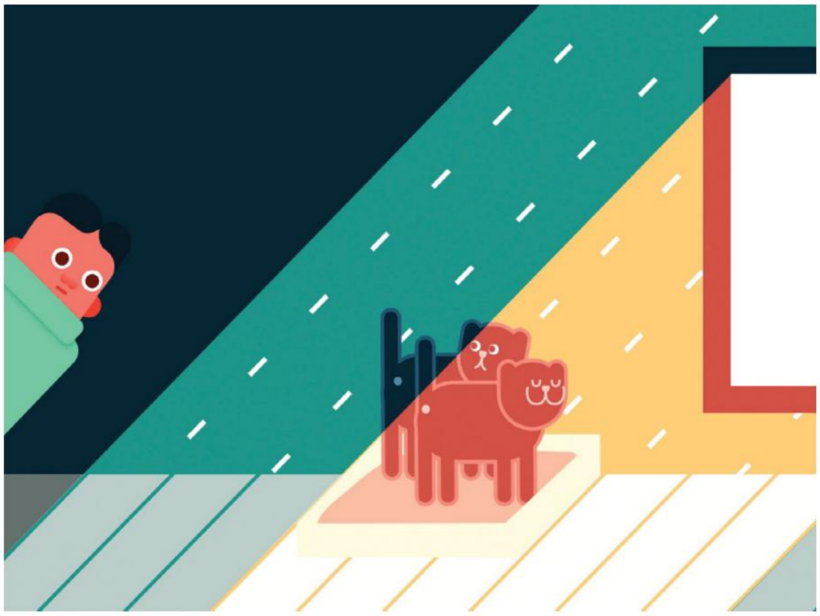
JC: What we now call Animade has taken a few forms and names over the years, but its core vision has always been to produce top-quality interactive and animated creative work.

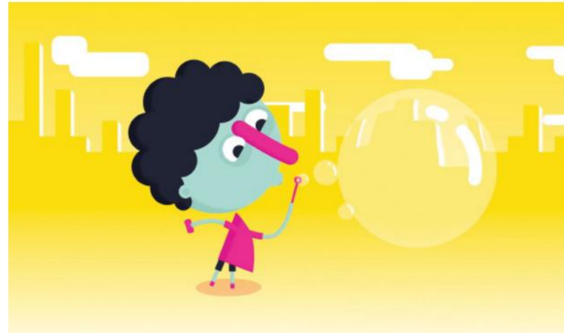
Tom and I studied Animation and Design Interactions respectively at the Royal College of Art. We collaborated while in college and found the two disciplines had a lot to offer one another, so things have grown from there.

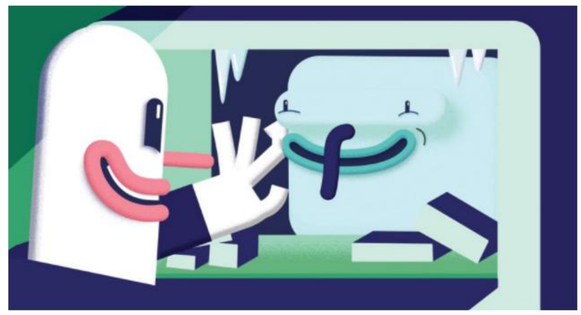
Regardless of the changes to the structure of the company we've always held true to the original mission, and feel we're closer to it now than we've ever been.

net: What was your first commission?

JC: Our first job was actually to design the website of another animation company. So the interactive/animation crossover was paying off from day one!







Word association Internal project Propz (*netm.ag/propz-272*) is a series of short animations on themes generated by Animade's online audience – including 'Mustard', 'Ball Sack' and 'Fridge'

net: What's better for an Animade project: to achieve critical or commercial success?
TJ: Each has its own different merits, yet both give us a chance to display our passion for what we do. Our latest work for Virgin America with the good people at Build (a colourful series of digital avatars: *netm.ag/virginamerica-272*) has been hugely popular with our followers and across the industry, while our short film Chronemics (*netm.ag/chronemics-272*) has reached 780k views and received critical acclaim since it hit the small screen four months ago.

net: Have you ever had to turn down a job?
JC: Yes, we've been forced to turn away work if we don't feel we have the capacity or sufficient time to do the project justice. We always try to find a way to deliver but the last thing we would want to do is over-commit and sell everyone involved short. Interaction and animation both have quite nuanced processes so we definitely see part of our role being to educate clients in how the process works. The bottom line is that everyone involved always wants to see the best result, so it's about fostering a sense of camaraderie and reinforcing the idea that we're all pulling towards the same goal.

Meet the team The Animade staff (plus Neve Neveu the dog) in the firm's offices near Old Street. Co-founders and directors Tom Judd and James Chambers are standing up at the back of the group

net: What's your preferred kind of client?
JC: It would be difficult to pin down a specific kind of client, as the variety of the work is a huge part of what makes this such an exciting industry to work in.

That said, the most interesting projects tend to be ones at the very early stages where we can become involved in the creative side on the ground floor and help shape an idea into something (hopefully) spectacular.

net: How do you and your clients measure the success of a job?
JC: Before starting any project there needs to be a set of well-defined goals as to what success 'looks like' from the point of view of the key stakeholders.

A goal can sometimes be something quite ephemeral. For example, in the case of an animation project, it might be a

XL at 25 Created in conjunction with a compilation celebrating 25 years of XL Recordings, Pay Close Attention (*pay-close-attention.com*) is an interactive experience that charts all of the label's artists, DJs and releases

positive reaction to the animated portion of a larger campaign. Equally, it can be quite specific, like decreasing bounce rate and increasing the overall dwell time on a website.

Either way having an agreed-upon measure of success before starting is vital not only to articulate the goals of the project in solid form but also to refer back to when making key decisions.

net: You've created several animations that play with ideas of computer use. Does inspiration often strike at the computer?
TJ: Lots of these ideas begin during chats over lunch or brainstorming whilst working on other projects. A busy environment makes for a creative one.

The hard part about internal projects is finding the time to work on them. They have been a huge part of our success, and it's easy to see that seemingly non-commercial projects have positive commercial repercussions. We put great emphasis on scheduling time for these internal projects.

net: Are all your ideas generated in-house, or are you open to working with outsiders?
JC: We're keenly aware of the larger creative context our work sits in. Our interactive blog Hover States (*hoverstat.es*) keeps us exploring what's happening on the cutting edge of interactive design, just as our animation blog (*animade.tv/blog*) constantly feeds us with great animation references, old and new.

We also welcome collaborations with other creative agencies who need specialist interactive or animation production partners.

net: In a digital world, is it still worth the expense of being based in London?
TJ: Definitely. Animade is all about the culture, which means the right team being in the same space working (and playing) together.

If we moved to a remote working setup we would instantly lose this. It might save a little money but it would certainly alter the company in ways that could spell its own demise.

net: How many different styles of animation do you create?
TJ: We flex to tackle any type of animation depending on the job. We find that the majority of our production is 2D digital (using After Effects or Flash), but our team love getting 'analogue' now and again when the possibility arises.

OFFICE CULTURE

ED BARRETT
Creative director

What's on your desktop?
Digital or real-world? On my desk I have my bike helmet, various CVs and business cards, a printed storyboard, a packet of googly eyes and a Post-It note with a poo drawn on it. My computer's desktop is mostly uncluttered and coloured a beautiful Shoreditch grey.

What little things make your life worthwhile?
Sites: Kill Screen, Vimeo, The Daily Mash
Apps: City Mapper, Zonr, Tall Chess
Reading: The Discworld novels
Music: Ratatat, C418, The Flaming Lips

What do you have on the walls?
I don't really have walls – just metal beams. One of them has my fireman's hat hanging from it.

What will you do for lunch?
I make my own sandwiches with weekly ingredients bought at the local Tesco. As a team we often gather round the table in the studio and eat together.

What else do you do in the office?
We play ping pong, chess, Jenga and Halo 4 multiplayer.

How often do you hang out?
We head out for a drink together at least once a week. We also have trips out as a team: this year we went to Wimbledon!

Describe your working culture in three words ...
Open, friendly, professional.

TIMELINE

A look at the key dates in Animade's history

JUNE 2009

Tom Judd starts the original Animade blog to archive interesting animation references while studying at the RCA

JULY 2010

James Chambers and Tom Judd form Chambers Judd Ltd and begin producing client work together

DECEMBER 2010

The duo move to their first studio

JANUARY 2011

First iOS game: Ready Steady Bang

SEPTEMBER 2011

The Hover States blog launches, celebrating the best interactive design

NOVEMBER 2011

Ed Barrett joins full time. The trio begin working under the name Animade

JULY 2012

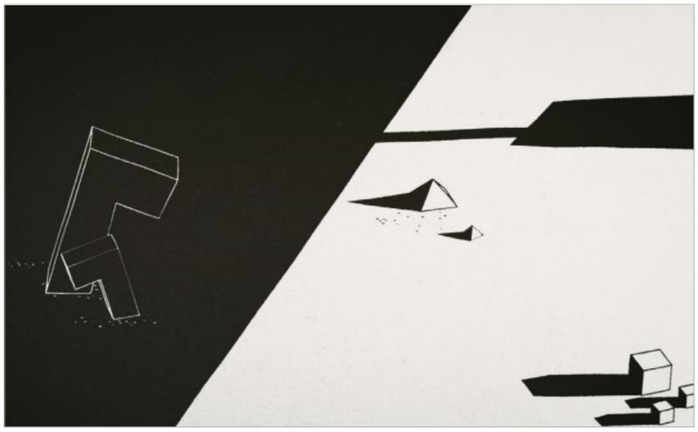
Animade expands into two more rooms, starts producing interactive work as Hover Studio, and gets a working sink

MAY 2014

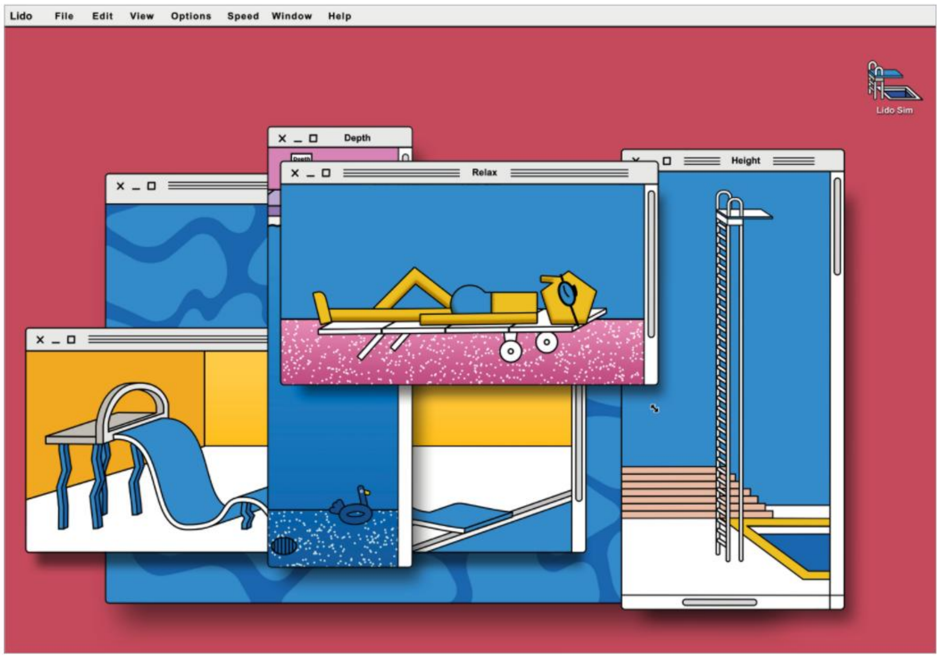
Animade wins a D&AD Award for its work on the Ray-Ban Social Visionaries campaign (*netm.ag/rayban-272*)

JUNE 2014

Hover Studio is merged with Animade to produce interactive design and animation under one name



Shadowplay Stemming from a commission for French and German TV channel Arte, Chronemics (*netm.ag/chronemics-272*) is a critically acclaimed black comedy about the conflict between Light and Dark



Game of Life Lido Sim (*netm.ag/lidosim-272*) is an internal project directed and animated by Milo Targett. The game-style short is set in a computer screen, inhabited by a solitary non-player character

net: Are there new media that you're keen to explore further?
TJ: We are currently developing an internal tool that will convert After Effects shape animation to HTML Canvas animation. Our animation workflows are heavily based in After Effects, yet there is currently no sound way to export for web.

net: What are you working on outside of client projects?
TJ: We are also starting to organise events for the creative community. In May we hosted London's first ever LoopdeLoop (*loopdeloop.org*) animation screening, attracting over 200 attendees.

We have also started a series of Animade Talks, the first of which looked at the importance of character in digital creativity. Held in our studio as part of Digital Shoreditch (*digitalshoreditch.com*), we are now looking at taking it elsewhere and expanding the series with further insights across the fields of animation and interaction.

net: Which of your upcoming projects can you tell us about?
TJ: frankenSim is our latest internal project, which has just launched (*animade.tv/frankensim*). It explores our nostalgic connection with operating systems through visceral interactions, with very human themes.

Last but not least, we're currently undergoing a major rebrand. It's a very exciting process that will see us solidify our brand message, along with a complete overhaul of our website.

Next month: Boricua designer Yesenia Perez-Cruz

GET THE DOMAIN YOU'VE ALWAYS WANTED

The new top-level domains such as .london offer a chance to snag the perfect web address for your business

When Rahul Khilochia set up Red Planet Technology, his first choice of *.co.uk* or *.com* domains were already taken. He wasn't going to miss out again; when the *.london* top-level domain (TLD) became available, he registered *www.redplanet.london* with Namecheap.

"I decided to make *.london* my primary domain as it helps with SEO," Khilochia explains. "When you type 'red planet technology' into a search engine, *www.redplanet.london* appears first. Although I have not been in business long, it's easy to find me." Since getting his *.london* site, he has received more enquiries and his traffic has increased.

Tom Hatzor of Print Labs London is another happy Namecheap customer. His decision to go with Namecheap came down to good value and quality of service. "As well as the prices, which are very appealing, I really like the free extras such as WhoIsGuard *[a tool that protects your privacy]* and live chat support. This really helped put me at ease when I had questions – they were very quick to respond and provided accurate information."

www.printlabs.london isn't Hatzor's only purchase with Namecheap: "I have several other domains registered with them, two of which are *.london*. I am always looking to add more as I get new ideas, or when a new TLD is released and creates a new opportunity."

PUTTING PEOPLE FIRST

Namecheap is a domain registrar and web host that puts people first, offering cost-effective, straightforward products and a friendly service. It is currently the fastest-growing registrar in the world. At the time of writing, Namecheap is offering *.london* names for the equivalent of less than £15 – around half of what other providers are charging.

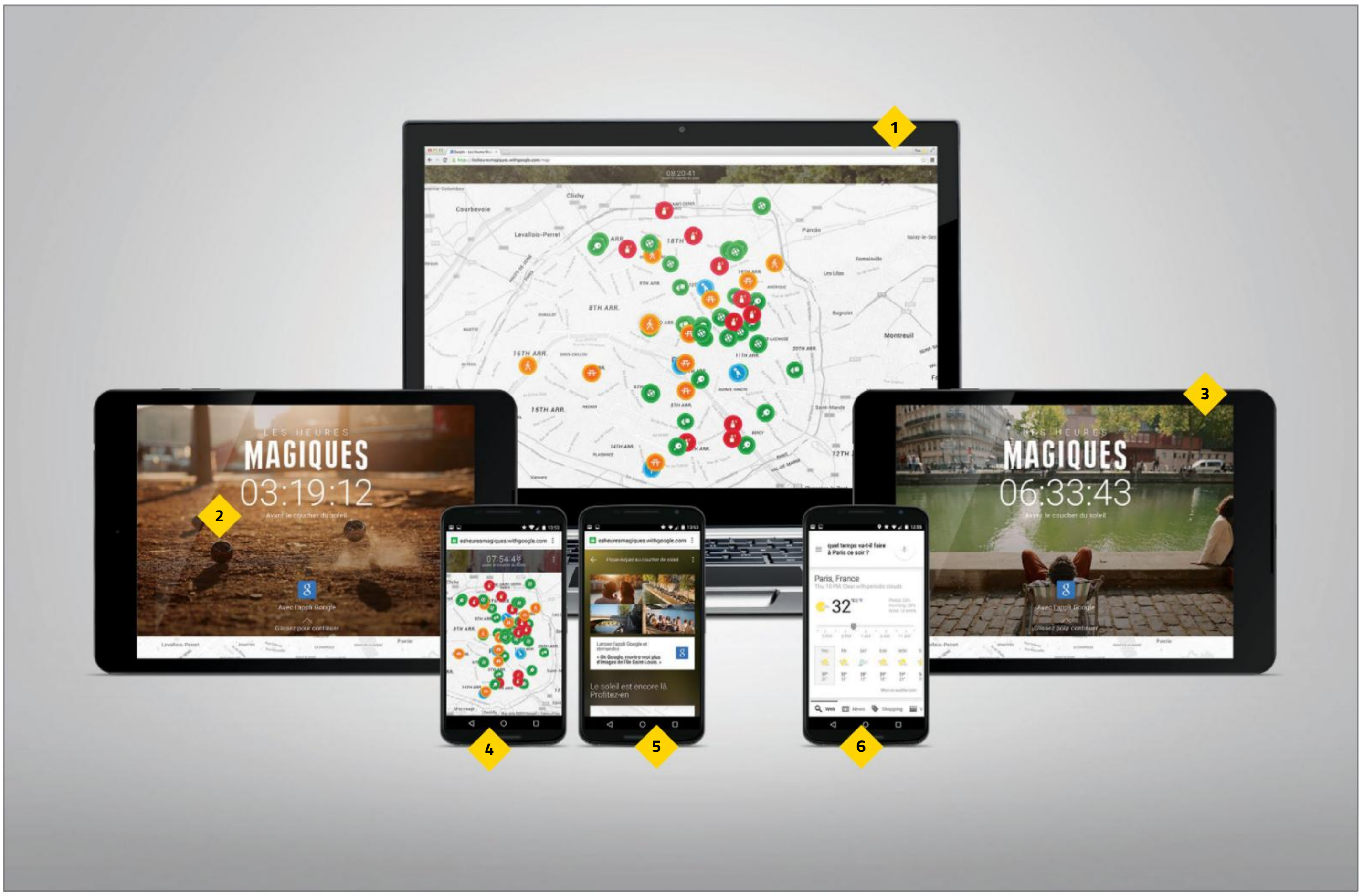
"I would highly recommend Namecheap for anyone looking to register a domain," Hatzor tells us. "Its price, additional extras and live support really does give you the whole package. Currently there's a special promotion and the *.london* domain is a fraction of the normal cost, so catch it before it expires!"

Check out **www.namecheap.co.uk/easyas123**

HOW WE BUILT

GOOGLE: LES HEURES MAGIQUES

72andSunny Amsterdam and **UNIT9** used weather-aware cinemagraphs for a site to encourage young Parisians to enjoy the magic of summer



BRIEF

Ad agency 72andSunny Amsterdam was asked to create a campaign to promote the Google app, targeting young French influencers. With UNIT9, the firm created a mobile-first experience encouraging Parisians to discover local events during the magical summer hours before sunset.

CLOSE UP

(**1**) Les Heures Magiques is an interactive mobile experience suggesting 51 things to do in Paris during the magical extra hours of daylight on summer evenings. (**2**) The countdown clock shows users how much time is left until the sun sets. (**3**) The website's landing page draws users in with a set of cinemagraphs depicting the activities on offer. Each is time-aware, updating according to the time of day a user visits the site. (**4**) Sliding up reveals a custom Google map highlighting a range of activities near the user, each indicated by a custom Google pin. (**5**) Once a user clicks on one of these pins, a page opens describing the activity selected, paired with still images of the magic hour at that location. (**6**) Every piece of information about the activity is paired with a search query that educates users on how to use the Google app and that, on click, automatically opens the results within the app.

RICHARD HARRINGTON

Richard is responsible for the design direction of 72andSunny Amsterdam.
w: *www.72andsunny.com*
t: @72andsunny

SANNE DROGTROP

Sanne leads interactive efforts at 72andSunny Amsterdam and led production for the site.
w: *72andsunny.com*
t: @susy_d

MARCIN LICHWALA

Marcin is technical lead in Le Polish Bureau, UNIT9's Polish department.
w: *unit9.com*
t: @marcinlichwala

Les Heures Magiques (*lesheures magiques.withgoogle.com*) is an interactive mobile experience to promote the Google app that celebrates the magical extra hours of daylight in summer. Interactive production studio UNIT9 was invited to collaborate with ad agency 72andSunny Amsterdam on the project, which uses stunning cinemagraphs and audio to showcase 51 locations in Paris and activities that can be carried out at those locations during long summer evenings. The site lets users zoom in on the Google map to see each specific location, while tapping on location pins pulls up information related to the event.

net: What are the key features of Les Heures Magiques?
SD: We worked with a team of local photographers, artists and cultural experts to capture the magic of Paris. The results can be seen in the cinemagraphs – still images that contain one small element of animation – which change according to the time of day, or in any of the 51 pins on the maps that reveal hidden gems through the city, each with specifically shot footage, descriptions and fun facts.
ML: Another critical feature was deep links to the Google app. Thanks to Android's intent mechanism we could create deep links in the website that triggered specific search queries inside the Google mobile app. This enabled us to expand the website's functionality outside the browser.

net: How did you use the visuals to evoke the feeling of summer?
RH: The website's landing page greets the user with a set of beautiful cinemagraphs, which add life to what would otherwise be a static background. The imagery is weather-aware during the day, and updates to reflect the current time. To achieve this we created two sets of imagery: one before sunset and one after. This lets the cinemagraphs work in harmony with the countdown feature in the middle of the page. Both elements offer the user an experience of Paris at that very moment.

net: How does the site prioritise content for the user?
ML: We created a bespoke prioritisation algorithm, which provided us with full flexibility when calculating the absolute importance value for each activity point on the map. This flexibility was achieved by making the algorithm composable from multiple sub-algorithms – one for each factor taken into account, such as weather, time of the day and estimated activity duration. Each sub-algorithm was designed to return a normalised value between 0 and 1, and each factor was assigned with a weight, which enabled us to calculate a normalised weighted average value. The resulting 'importance' of the point is expressed through the size of its map marker.

To make the information about the weather and time of sunset/sunrise timely we used external weather and astronomy APIs to update us with new ▶

★TIMELINE

Key stages on the journey to the magic hour

JANUARY 2015
72andSunny Amsterdam aligns with Google on the brief for the campaign

FEBRUARY 2015
After two weeks of heavy collaboration between Google and 72andSunny Amsterdam, the strategy is signed off

MARCH-APRIL 2015
The team searches for a concept. After a visit to Paris, seeing the first rays of sun, Les Heures Magiques is born

APRIL 2015
Location scouting in Paris and identifying partners on the ground

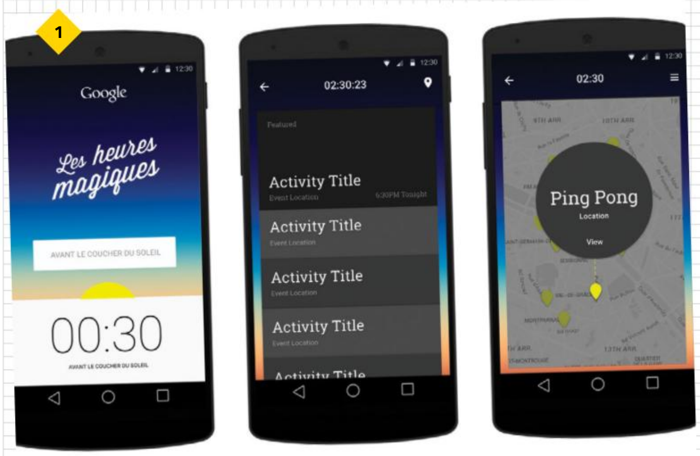
MID APRIL 2015
A team of fantastic makers sets out to scour the city for rays of sunshine. Not easy when it rains all the time!

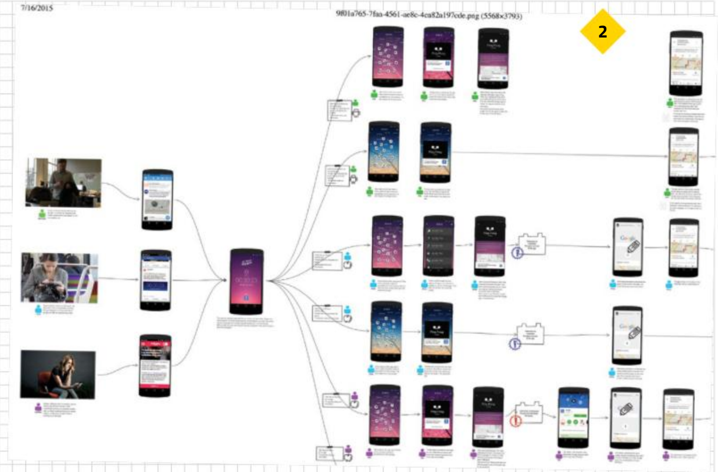
LATE APRIL 2015
After an intensive pitch process, UNIT9 gets involved. The interactive production studio has to hit the ground running

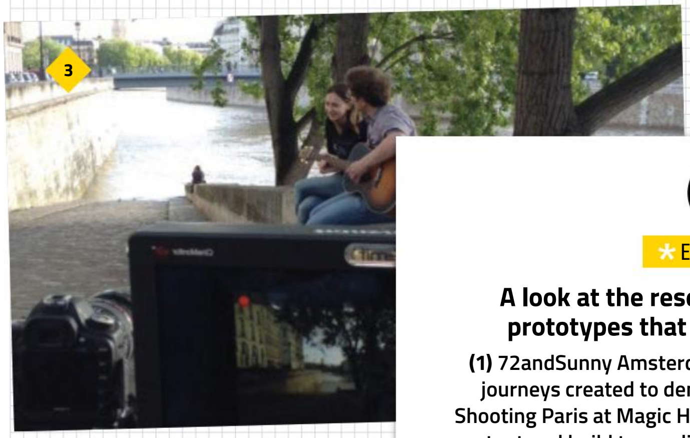
MAY 2015
Content integration. All the pieces of the project begin to come together

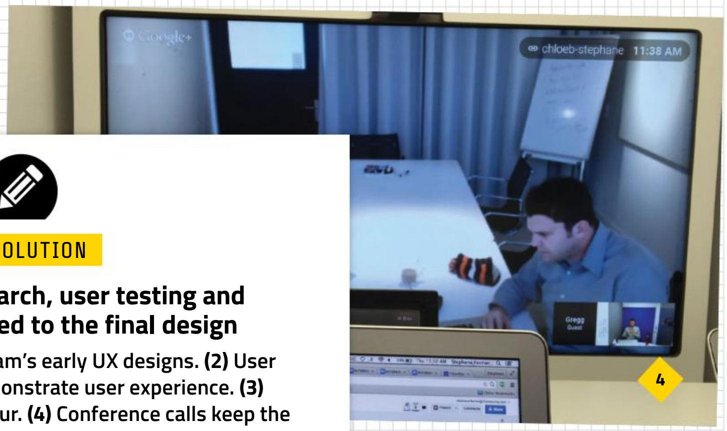
LATE MAY 2015
Final tweaks to the web app and content. Les Heures Magiques hits social media as the first films, GIFs, hyperlapses and images are released

8 JUNE 2015
The campaign goes live. The next few weeks are spent organising weekly events in Paris with Google partners





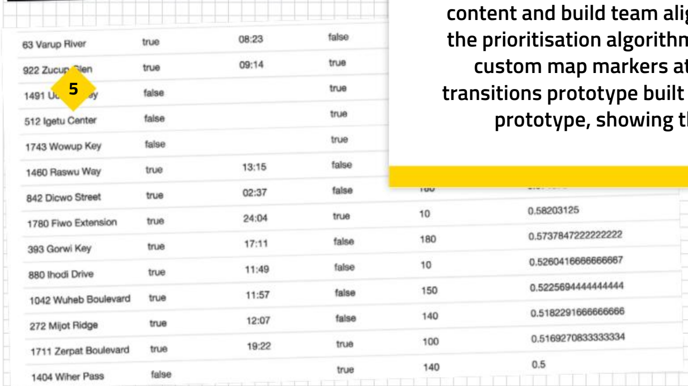


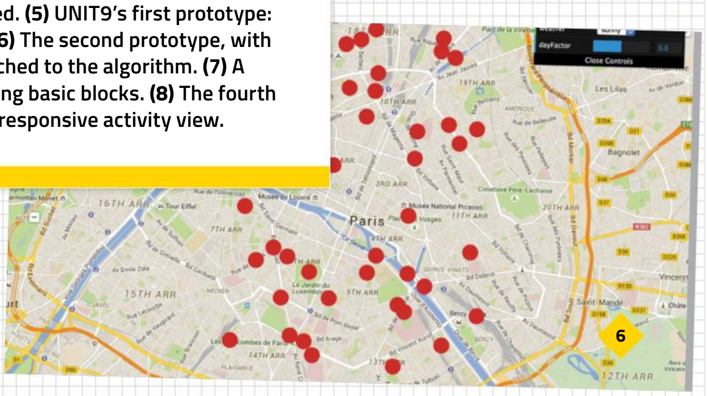


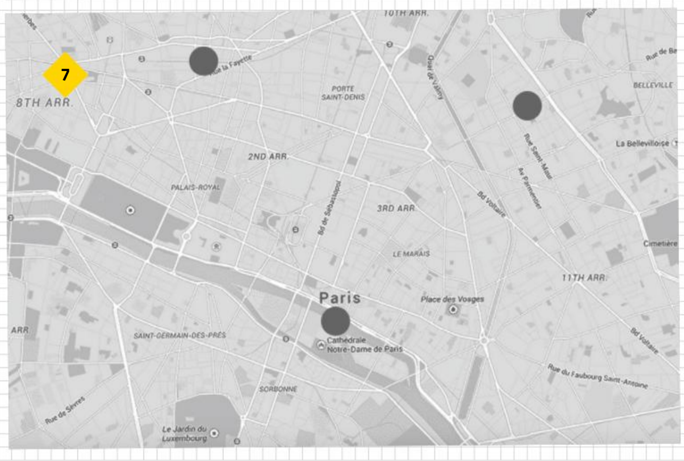
EVOLUTION

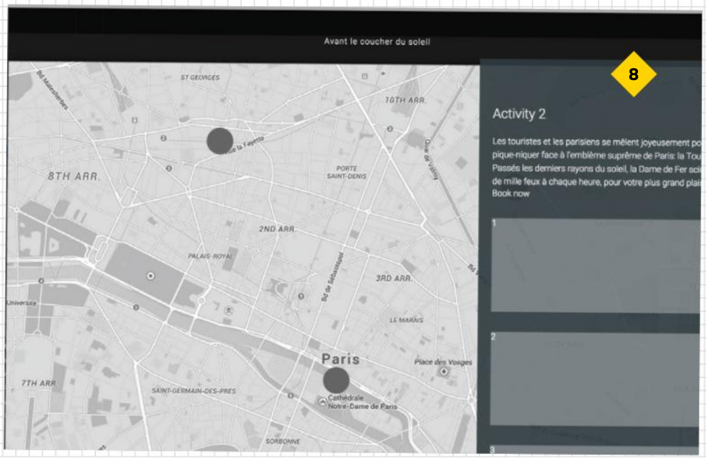
A look at the research, user testing and prototypes that led to the final design

(1) 72andSunny Amsterdam's early UX designs. **(2)** User journeys created to demonstrate user experience. **(3)** Shooting Paris at Magic Hour. **(4)** Conference calls keep the content and build team aligned. **(5)** UNIT9's first prototype: the prioritisation algorithm. **(6)** The second prototype, with custom map markers attached to the algorithm. **(7)** A transitions prototype built using basic blocks. **(8)** The fourth prototype, showing the responsive activity view.









information every hour, in the case of the weather, or daily, in the case of the sunset and sunrise times.

net: What were the biggest challenges of the project?
RH: From a design point of view, you want to give each project its own unique character and identity in order for it to stand out, yet Les Heures Magiques needed to feel like it was part of the Google design family.
SD: From a production perspective, the campaign expanded way beyond the web app. In collaboration with our partners, we created an enormous amount of content for the social and paid marketing campaigns, as well as weekly events. Paris is large and it was raining a lot in the period that we were shooting, which required a lot of flexibility.
ML: It's always a challenge to deliver a mobile-first website for clients like Google where compromise on design can't be an option. We invested a lot of time in optimising both the network and runtime performances. We had to ensure the website was as light as possible, whilst maintaining visual quality. This was achieved using special techniques for asset compression, especially where the cinemagraphs were concerned.

Golden hours Les Heures Magiques suggests possible leisure activities for long summer evenings in Paris, using imagery captured by a team of local photographers recruited by ad agency 72andSunny Amsterdam

net: How did the mobile-first focus affect workflow?
ML: Making the cinemagraphs as performant as possible on every supported platform became an even more interesting task. There was no 'one-shoe-fits-all' solution: we had to treat each platform separately.

To shorten the path to first pixel, we decided to load a regular JPEG background first to create time during which the heavier video assets could load. For desktop, where we could load an MP4 video file in the background, we used an HTML5 video component where each frame was drawn on an external canvas to achieve a better looping effect.

On Android and iOS, the task was more challenging as we could neither load an MP4 video file in the background nor, in iOS, play it inline. Therefore we used a method that decoded the MPEG-1 video file in JavaScript and rendered the frames on an HTML5 canvas. This method is CPU-bound, so we had to optimise the video resolution to ensure performance. This enabled us to provide better quality and playback control than with a GIF file, although we did use a GIF file as a final fallback solution for Chrome on iOS.

net: What other techniques did you use to ensure optimum performance?
ML: We employed all the best practices for network performance, such as minifying the code, compressing all the image assets, providing different sets of assets for mobile and retina, optimising the cinemagraphs, and lazy/progressive loading for the images.

We made sure all the animations performed in an optimal way by using our knowledge about the browser internals (for example, the requestAnimationFrame API, CSS3 transitions and animations, animating only with the layer compositor – no paint or layout actions were performed during animations, and GPU acceleration). We also used browser dev tools to profile the application and remove any performance bottlenecks. We recommend Paul Lewis's blog (*aerotwist.com*) for more information.

net: How did you manage the testing process for the app?
RH: All the elements were rigorously tested right up until launch. We're always looking for new and better ways to make things. A good example is the animations in the cinemagraphs, which we tweaked all the way throughout the process to get the best end result.
ML: Prototyping was critical. Every function was specifically customised, so we had to perform feasibility studies on many components, including the prioritisation algorithm, custom HTML markers for Google Maps, cinemagraphs, and Google app deep links.

UNIT9 created a special framework that enabled us to prototype the functionality of the website independently of the transition/animation structure, and thus work on both aspects in parallel. In this way we shortened the feedback loop between us and 72andSunny Amsterdam. We could share the raw transition prototypes and also mitigate all the risks connected with potential conflicts when these two parts were connected, as the codebase was clearly separated between the two parts with a well-defined API.

Next month: Spring/Summer's work for B&O Play and Rapha

IMPROVE
WITH GOOGLE
Use analytics to boost traffic

Web analytics tools have a lot to offer the user experience field. Because the tools have matured and there's so much information out there about how to use them, now is a great time to get started working with them.

With web analytics, user researchers can look at much larger sample sizes than is possible with more resource-intensive methods, such as usability testing. This can be useful if you need to establish a high degree of certainty that a particular design change will be effective before you implement it. Analytics also gives researchers an opportunity to come up with answers much quicker than is possible when using in-person activities.

On the other hand, analytics data can't tell you why people acted the way they did. You can only infer people's intent and you can describe what their behaviour actually was. Analytics data works best when used as the starting point for a hypothesis, and is combined with other kinds of research data.

When it comes to web analytics, the specific tools you use are less important than understanding what kinds of data they collect and how to use that data. This article will focus on Google Analytics, but the information is applicable to pretty much any analytics tool. We'll focus on two areas that can be useful for user research: characterising user behaviour, and inferring users' intent.

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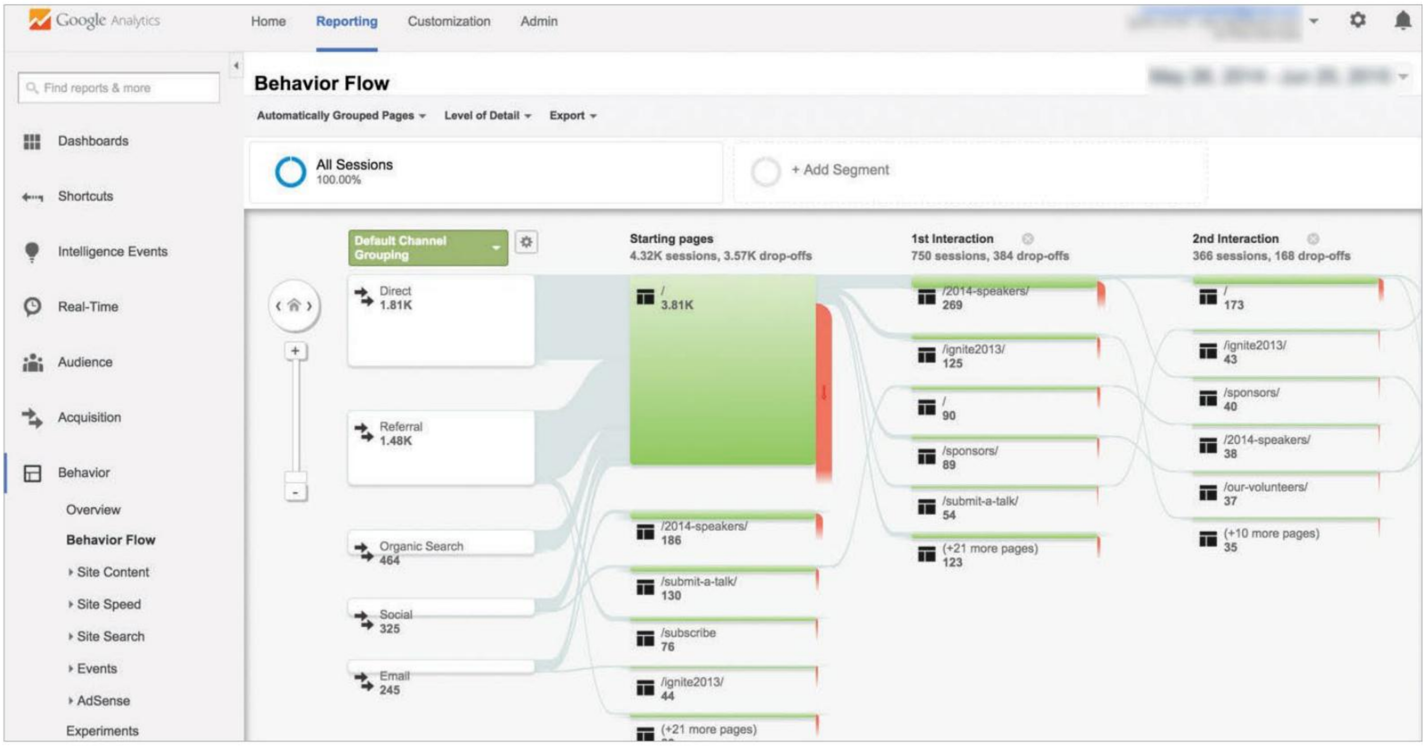


User paths The Behavior Flow report describes the paths that users take across multiple pages of a website

CHARACTERISING USER BEHAVIOUR

What are people actually doing on your website? Finding out this information can help you in a number of different ways. You can use it to discover potential problem areas, prioritise the areas of your website you need to invest design effort in, construct realistic tasks for usability testing, flesh out personas, add evidence to research findings and usability inspections, or assess the effectiveness of a design change.

This kind of analysis typically arises when a business stakeholder gets curious about how people interact with the organisation's website and wants the UX team to look into it. It can also be useful when you're redesigning part of a website and want to gather information about what may be wrong with the original version of the design.

Behavior Flow

The Behavior Flow report (pictured above) shows how people move from page to page. It's a pretty good solution to a difficult information visualisation problem. Starting on the left, you follow the paths people take across pages, where they branch off into different directions, and where they leave the site.

This report focuses on the most common paths that people take –

CASE STUDY: ITHAKA

ITHAKA provides services to the academic community, including JSTOR, a cloud-based library of scholarly content including books and journals. In 2014 and 2015, we've engaged in a significant effort to rebuild JSTOR on a more flexible platform. Analytics has proved invaluable to this effort.

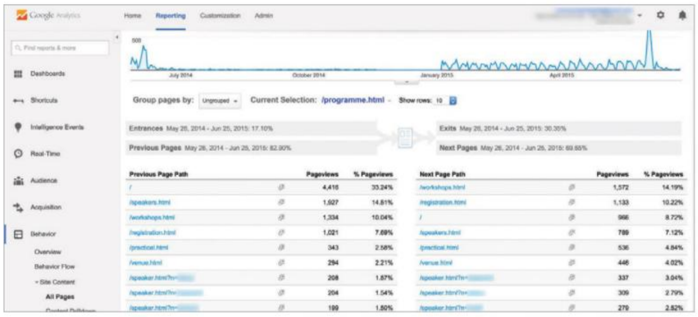
What to build

Balancing the needs of researchers, libraries and publishers while on a tight timeline means making hard decisions about which features to rebuild on the new platform and which to retire for now. Finding out if people actually use a particular feature is key to these decisions. In one case, we found that users had only clicked on a particular feature 1,000 times out of millions of visits, which meant we could prioritise features that saw much more usage.

Measuring effectiveness

During the re-platforming, we've taken the opportunity to redesign some features. In these cases, we wanted to ensure we had actually improved users' experience or at least maintained the quality of users' experience.

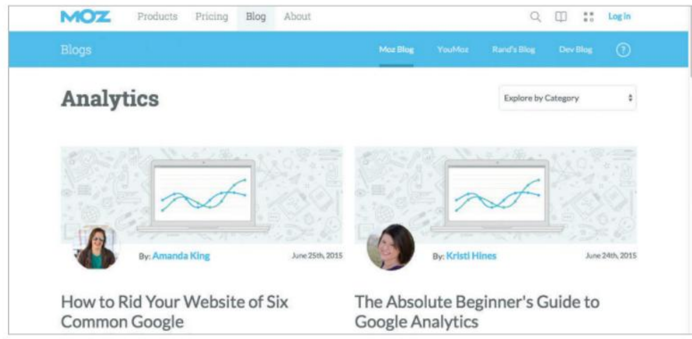
Distilling the concept of a good user experience into something analytics can judge means finding a measurable action on the site that suggests a successful visit. This could be something indicating a goal – like reading an article or book – has been accomplished. By monitoring whether article downloads went up or down after a design change, for example, we could measure the effect of our alterations.



To and fro Navigation Summary shows you what pages people came from to get to a page, and where they go next

Speed, focus, insights This article by Avanash Kaushik takes a closer look at five custom reports, and considers how they can help you unlock insights about your site

Event order Events Flow, like Behavior Flow, shows the order in which users trigger events and where they stop performing those actions



Moz blog The Moz blog offers a range of articles by different experts that will help you get the most out of analytics tools

otherwise, there would be too much data to show. For most websites, even the most common paths still represent a minority of users.

The value of this report is in choosing specific pages and looking at the next few pages that people go to. You should look for people:

- **Going to a page you wouldn't expect:** This indicates potentially misleading navigation. It suggests it's hard for your users to find what they're after, or that you don't understand what they actually want to do
- **Exiting the site in large numbers:** This can indicate unhappiness or frustration, or it could indicate satisfied users who have completed their task
- **Going back and forth between pages:** This can also indicate potentially misleading or confusing navigation, where people click on a link, decide they don't want that page, and go back to try again

Navigation Summary

Behavior Flow doesn't show you a lot of detail, and it doesn't show you how people got to your page. The ability to see which pages people came from to reach your site is valuable for uncovering relationships between pages. When you need an exhaustive list of pages people navigate to and from, you use the Navigation Summary report.

For any specific page, the report presents two columns listing users' previous and next pages, and the portion of pageviews coming from each page. Instead of just a handful of examples, you can see every link people clicked on to get to a page on your site.

Events Flow

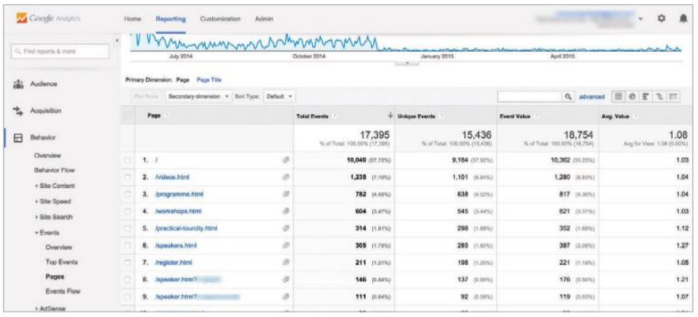
It's worth noting that not every action on a website takes the user to a new page – this is particularly the case with highly interactive websites. That's why Google Analytics offers event tracking. Events can be any kind of user action you want to track with analytics, but they're typically actions that would otherwise be invisible to analytics, like clicking a button that doesn't take the user to another page. In this case, you will have to do some additional configuration to track what people are doing, and may need the help of a technically minded person.

In Google Analytics, the reports you would look at are organised under Events. These can tell you how many times people take the actions you're measuring, and where on the site they do so. There's even an Events Flow report that works like Behavior Flow.

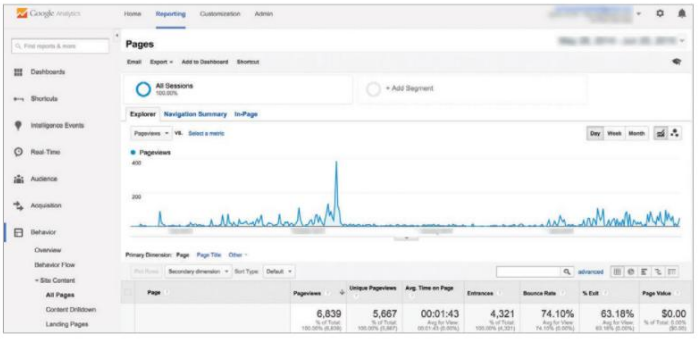
Behavior Flow shows how people move from page to page. The value of this report is in choosing specific pages and looking at the next few pages people go to

INFERRING INTENT

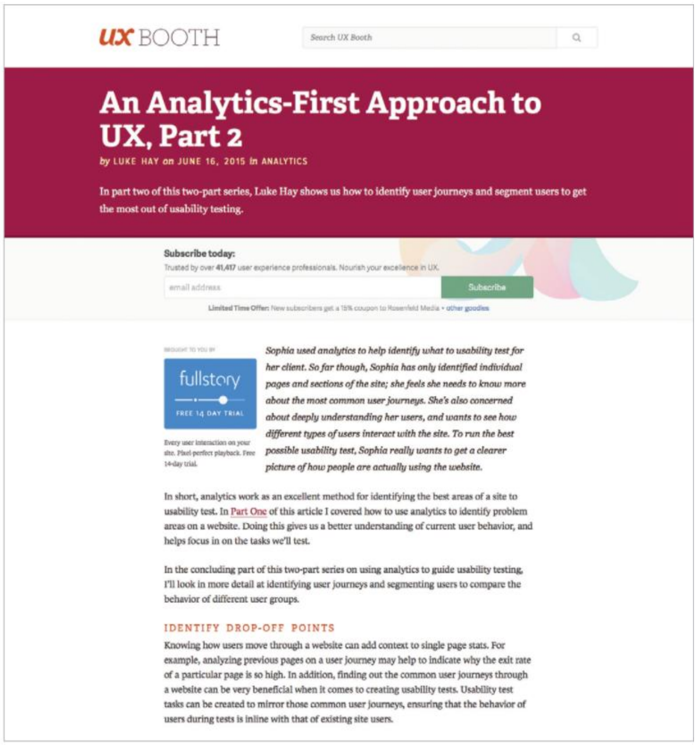
One of the things you may want to learn about your users is what they



Actions and events Navigate to Events, then Pages to see the pages users performed the actions that got measured as events on



All Pages Get an overview of what pages of your website people are viewing with the All Pages report



UX BOOTH

Search UX Booth

An Analytics-First Approach to UX, Part 2

by LUKE HAY on JUNE 16, 2015 in ANALYTICS

In part two of this two-part series, Luke Hay shows us how to identify user journeys and segment users to get the most out of usability testing.

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Sophia used analytics to help identify what to usability test for her client. So far though, Sophia has only identified individual pages and sections of the site; she feels she needs to know more about the most common user journeys. She's also concerned about deeply understanding her users, and wants to see how different types of users interact with the site. To run the best possible usability test, Sophia really wants to get a clearer picture of how people are actually using the website.

In short, analytics work as an excellent method for identifying the best areas of a site to usability test. In Part One of this article I covered how to use analytics to identify problem areas on a website. Doing this gives us a better understanding of current user behavior, and helps focus in on the tasks we'll test.

In the concluding part of this two-part series on using analytics to guide usability testing, I'll look in more detail at identifying user journeys and segmenting users to compare the behavior of different user groups.

IDENTIFY DROP-OFF POINTS

Knowing how users move through a website can add context to single page stats. For example, analyzing previous pages on a user journey may help to indicate why the exit rate of a particular page is so high. In addition, finding out the common user journeys through a website can be very beneficial when it comes to creating usability tests. Usability test tasks can be created to mirror those common user journeys, ensuring that the behavior of users during tests is inline with that of existing site users.

Exploring analytics This two-part article by UX Booth considers an analytics-first approach

came to the website to do, or what they're trying to accomplish on a particular page or part of the site. Of course, web analytics alone can never tell you for sure what users want. What it can do is give you evidence to form or support a theory.

Tools like Google Analytics provide you with multiple ways to learn what people may have on their minds. Looking at what pages people view can help you understand their overall goal in coming to the site or what they're trying to do on a particular page.

Looking at the things people search for can be particularly useful, as this provides you with insights into users' goals using their own words. You can also look at where people came from to get to your site for clues about why they decided to visit.

INFERRING INTENT FROM NAVIGATION

One way of forming theories about what people are trying to accomplish is by looking at what they actually click on. This approach isn't perfect, of course – you never know if people navigate to a page because they want to read what's there or because they *think* they want to read what's there. That's one of the reasons why analytics data goes best with other kinds of user research.

All Pages

Let's start by getting an overview of what content people find interesting. The All Pages report in Google Analytics shows all the pages people view, and by default it sorts them from most-viewed to least-viewed. Just looking at the most commonly viewed pages can help you understand what content people want to see.

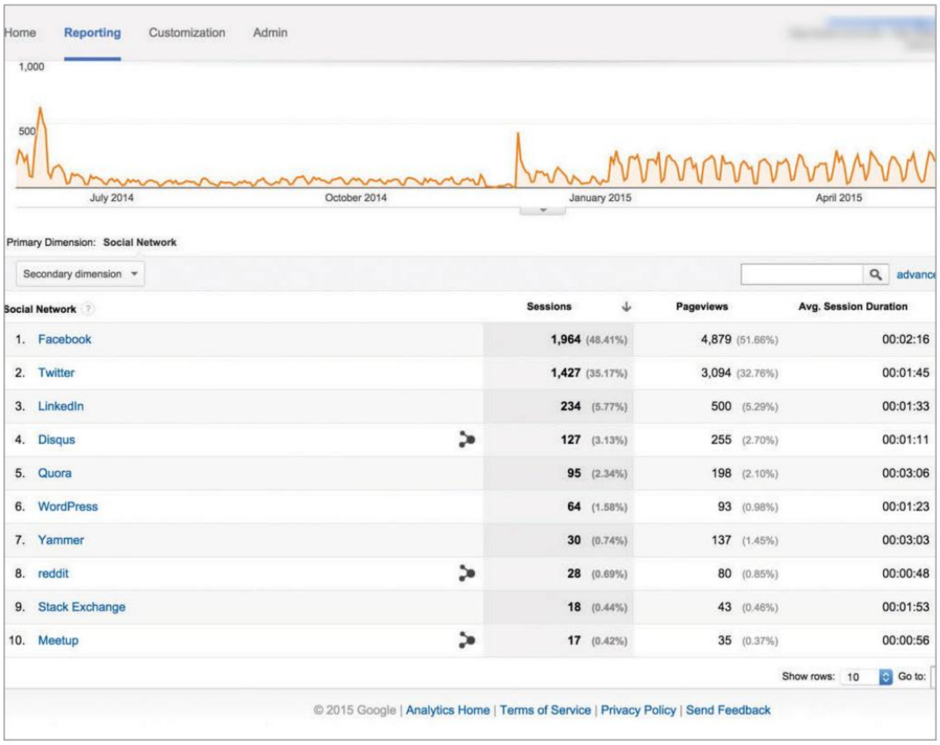
However, keep in mind that there may be pages that people *have* to visit, like the homepage or search results. Instead, focus on pages that contain information or that let users do things.

Besides providing evidence of the relative level of interest in different pages, you can also see that All Pages shows you a set of metrics that give you an overview of how people use the pages. Let's dig into them.

Pageviews tells you every time anyone looked at a page, and unique pageviews tells you how many individual people looked at a page at least once. So if one person views a page five times, that would be five pageviews and one unique pageview. By comparing the number of pageviews for a given page with the number of unique pageviews, you get a sense of whether people are viewing pages multiple times in a single session or if they tend to view pages only once.

You can also get a sense of engagement with the pages on your site through average time on page and bounce rate.

Looking at what pages people view can help you understand their overall goal in coming to the site, or what they're trying to do on a particular page



Social Network	Sessions	Pageviews	Avg. Session Duration
1. Facebook	1,964 (48.41%)	4,879 (51.66%)	00:02:16
2. Twitter	1,427 (35.17%)	3,094 (32.76%)	00:01:45
3. LinkedIn	234 (5.77%)	500 (5.29%)	00:01:33
4. Disqus	127 (3.13%)	255 (2.70%)	00:01:11
5. Quora	95 (2.34%)	198 (2.10%)	00:03:06
6. WordPress	64 (1.58%)	93 (0.98%)	00:01:23
7. Yammer	30 (0.74%)	137 (1.45%)	00:03:03
8. reddit	28 (0.69%)	80 (0.85%)	00:00:48
9. Stack Exchange	18 (0.44%)	43 (0.46%)	00:01:53
10. Meetup	17 (0.42%)	35 (0.37%)	00:00:56

Social side Google Analytics has reports for finding out what social networks people came from and how engaged they are

- **Average time on page:** Tells you the average amount of time that people spent viewing a given page
- **Bounce rate:** Tells you how many people entered your site on that page, then left without doing anything or going to another page

Look for pages that have engagement metrics that are much higher or lower than other pages or the overall average, and consider why that might be the case.

Navigation Summary

As well as looking at what content your users are interested generally, you can also take a specific page and find out how people got there. That's where the Navigation Summary report comes in. Look at the previous pages and try to understand why people may have moved from one page to the next.

INFERRING INTENT FROM SEARCH

Another good way of getting clues about what people want is to look at what they search for in search engines and on your site. For search engine data make sure Google Webmaster Tools is installed properly and connected to Google Analytics. What you'll get from this integration is access to what searches brought people to your site (Search Engine Optimization > Queries report).

Site search data is in the Search Terms report. Feeding data into this report requires a bit of setup in Google Analytics so it receives the data properly. This report gives you a wealth of data – far more than we have space to discuss here – about not just what people searched for, but how they behaved after doing their searches.

In both cases, you can get an overview of the actual words people use to describe their information needs, and the number of people that search for each phrase. Are people looking for things that your website doesn't have? Does the language on your website match the language people use? When you perform these searches, does the page you get match what users seem to be looking for?

Look at the relative proportions of how many people search for each phrase. Does the proportion ▶

Working with quantitative data

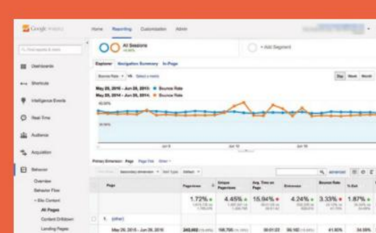
The most important part of learning to work with web analytics isn't learning how to use a specific tool, it's learning to work with quantitative data and understanding what analytics measures. For many people in UX, quantitative data is a bit new, so here are a few things to remember.

When you work with quantitative data, you don't spend a lot of time working with raw numbers or looking at lots of individual data points. Instead, when you have a dataset covering the behaviour of thousands of users, you find ways to break down the data by things like page, how users go to your website, or what kind of device they're using. Then, you compare these segments by looking at averages, proportions and rates.

It's also important to remember that web analytics is not a perfect data source. There will always be a certain amount of noise and missing data. That's not a flaw specific to analytics, it's just how it is with any tool.

If your analytics tool is set up properly, you can assume the level of noise is consistent and instead focus on measuring trends over time or comparing the differences between segments or between time periods.

Lastly, a deep understanding of what and how analytics tools measure things protects you from overstating what the data tells you or coming to incorrect conclusions. You can work more quickly and come up with creative solutions when there aren't easy answers to your questions.



RESOURCES

There are lots of great resources about web analytics, but it's hard to find material that's specifically about analytics for UX experience. Here are some great blogs to follow about analytics in general and recent articles with a UX focus. Some of the blogs here cover a range of analytics topics, giving you a deep dive that is invaluable.

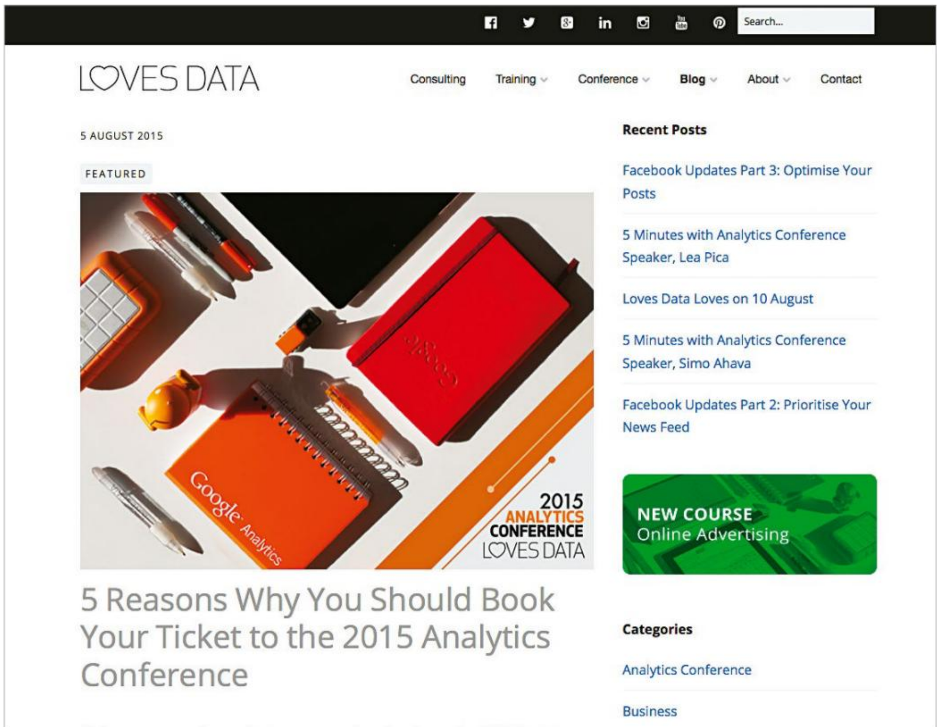
Speed, focus, smart insights
netm.ag/kaushik-272
This article by Avinash Kaushik explores five Google Analytics custom reports

Moz blog: Analytics
moz.com/blog/category/analytics
The Moz blog provides plenty of posts exploring how to work with analytics

Loves Data: Google Analytics
netm.ag/loves-272
This data blog has a section dedicated to Google Analytics

An analytics-first approach to UX
netm.ag/uxbooth-272
This article, divided into two parts, goes into detail on a good variety of UX-specific analytics uses

Three uses for analytics in UX
netm.ag/three-272
A good discussion of how to blend analytics' quantitative data with more qualitative user research data



Data love The Loves Data website provides tips and insights to help improve your site's performance and marketing

of searches reflect how important you think these topics are to users?

INFERRING INTENT FROM WHERE PEOPLE CAME FROM

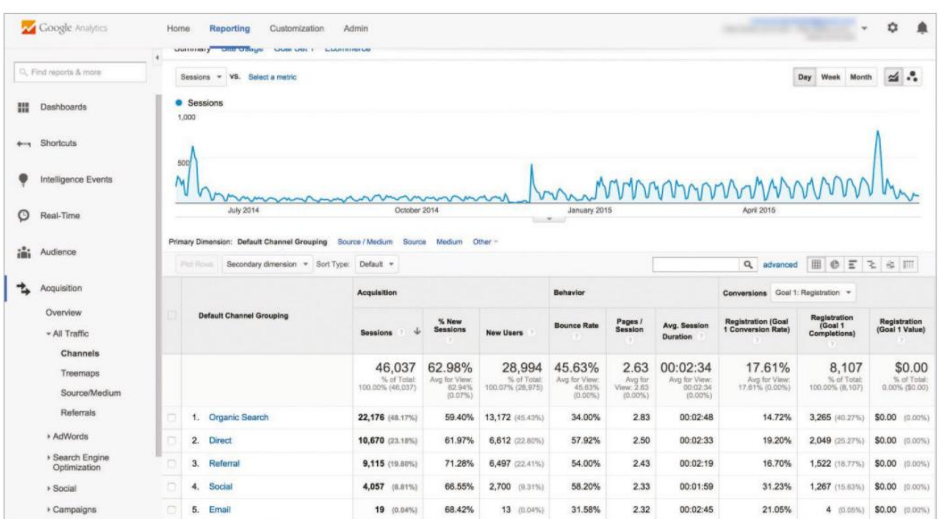
In Google Analytics, the key to inferring people's intent from where they came from is the Acquisition reports. Google has a variety of interesting reports in this section corresponding to the different ways people get to your site. Each has its own nuances, but with the exception of the Social reports, they work in similar ways. As an example, we'll take a look at how to interpret the Referrals report.

Referrals

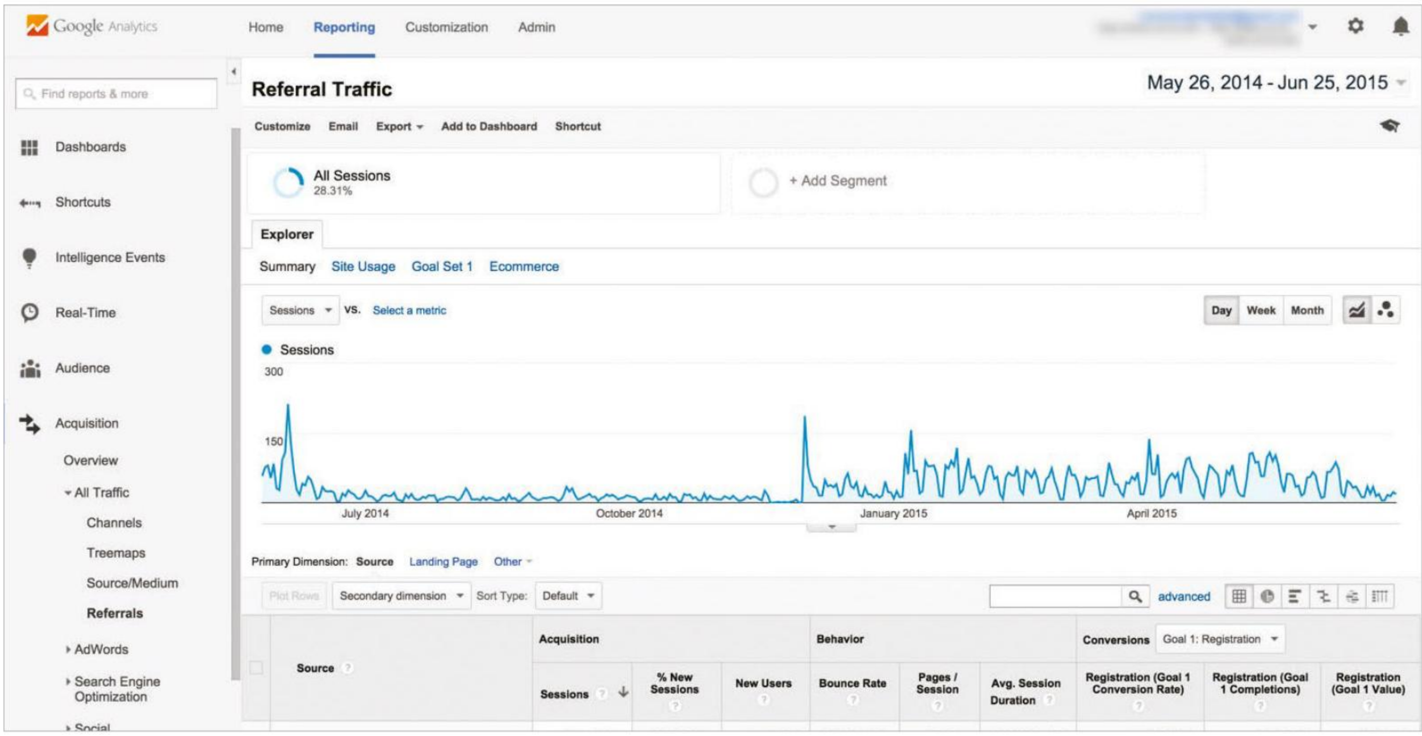
The Referrals report takes only the traffic that comes from websites that link to yours and shows you what websites they came from. Looking at this list of referrers can give you clues about why people come to your site.

The conclusions you draw will vary based on what you see in this list – do you see informational sites where people may be researching a concept, like Wikipedia? Or maybe product review sites, indicating they may be shopping for something? Are they coming from a news site, or a personal site?

Look at the proportion of people coming from each of these referrers. How does this match your expectations about how users get to your site? This report also has high-level metrics that characterise the people coming from these different channels.



Channels report You can get an overview of the ways people get to your site in one place with the Channels report



Drilling down Referrals is an example of the kind of drilling-down you get with any of the channels people use to get to your site

Bounce rate, pages/session and average session duration give you an overview of how engaged people are:

- **Bounce rate:** Tells you what portion of your users come to your site and leave without clicking on anything, which can indicate a lack of engagement
- **Pages/session:** This describes how engaged people are on your site, showing you the average amount of pages they look at during their visit
- **Average session duration:** This shows how long users spend on your site

As before, look for metrics for individual referrers that are much lower or much higher than the overall average, and try to think of an explanation based on the context of the referrer. Is it a blog post that links to your site, causing people to checking it out briefly? Or is it a partner company's website sending people over to do some business?

Then there are goals and conversions. A goal measures whether or not users took an action on your site that's important to your business, like completing a purchase or signing up for an account. In a perfect world, goals reflect things that are both important to the business and important to users. Conversion rate is the portion of your users that complete one of these goals.

What these metrics tell you is how many of your users (divided by channel) either had a good enough experience to accomplish some important action, or were motivated enough to try. By looking at conversion rate segmented by referrers, you can get a sense of which sites are sending people who are in a state where they're likely to take the action you're aiming for (e.g. they might be prepared to buy something).

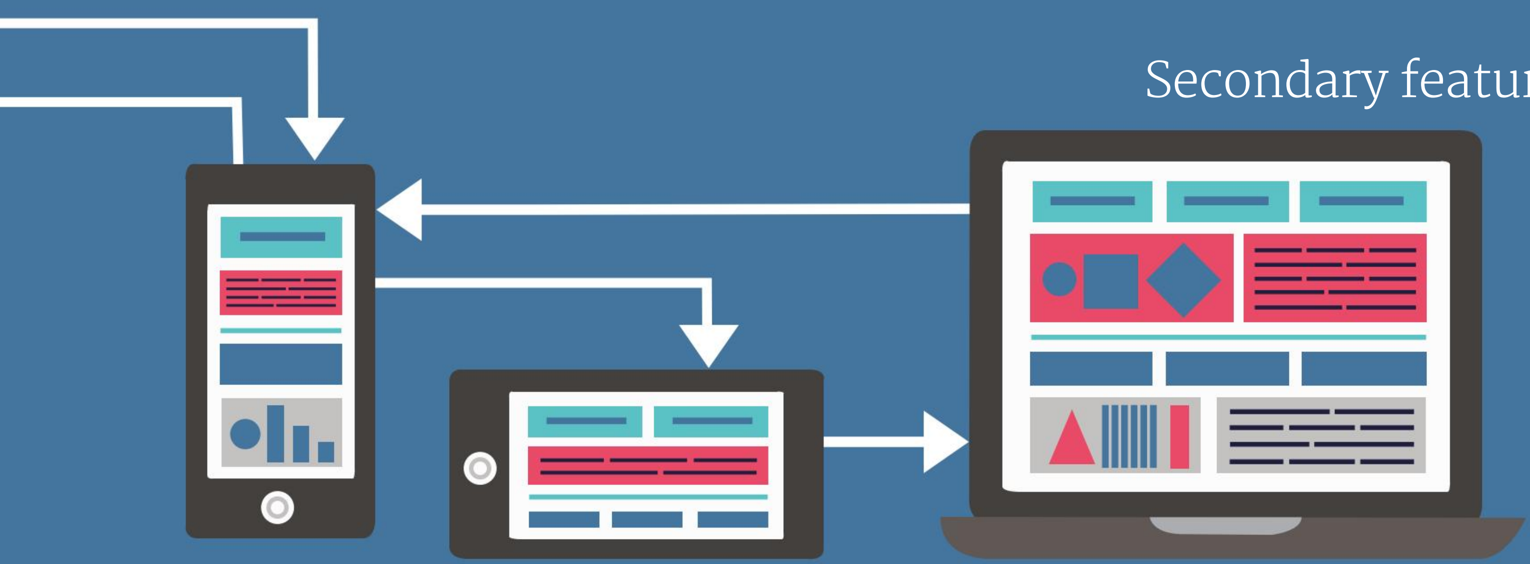
Part of your analysis may be to go to the site that's pointing people to your page and find the link so you can see the context. You can find out what specific page the link is on by clicking the 'Secondary dimension' button, opening 'Acquisition' and selecting 'Referral Path'. This will break down the list of referrers so you can see what pages people were on when they clicked on a link to your site.

Look for metrics for referrers that are much lower or much higher than the overall average, and try to think of an explanation based on the context of the referrer

CONCLUSION

We've only scratched the surface of what web analytics can tell you about your users. There is a huge amount of information waiting for you, and the best way to learn is by doing.

Make sure you have access to analytics for your website, and when you have questions about users, you should ask yourself if it's something that analytics can help you discover. With practice, you'll get more comfortable and find that analytics fits in well with other user research approaches. n



MULTI-DEVICE DESIGN
BEST PRACTICES AND PITFALLS

Patrick Haney and **Jenna Marino** take you through the practices to follow and mistakes to avoid when designing for smart devices of all shapes and sizes

AUTHORS

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Designers today have a number of things working in their favour. They are able to search a vast collection of resources for documentation and inspiration online, they can become part of a community around specific devices and operating systems, and they can easily collaborate and share knowledge with their colleagues.

But with all the technological advances in our society, a designer's responsibilities have begun to bleed into other areas as well. Design constraints are no longer just about screen sizes and operating systems. Here are some tips and tricks to help any designer in our new, multi-device, connected world.

STATE THE OBVIOUS

As designers, sometimes we take things for granted. We've become familiar with the notorious hamburger icon as a navigational prompt, but how many of our users are still unaware of what it means? And how can we help ease the transition to these new interface metaphors?

Think about the last time you found yourself in front of a restroom with cleverly renamed signage for 'Men' and 'Women'. Did it take you an extra second or two to get the right door? Ambiguous restroom labels are almost as annoying as the obscure UI patterns we've begun to see in our websites and apps.

Being clever may add delight, but the obvious always wins. As Luke Wroblewski points out, hiding parts of your app behind menus, ambiguous or not, can greatly decrease engagement (*netm.ag/wrobleski-271*). It's a case of out of sight, out of mind.

For smart TVs, it gets even worse. Hiding important information under a menu on a television screen never

TVs: STAY IN CONTROL

Take a look at your TV's remote control. How many of those buttons do you actually use? Probably 10 at most, including the four directional buttons (left, right, up and down), a selection button, channel up and down, volume up and down, and the power button. When designing applications for TV, be aware that each brand has its own design and button arrangement, not to mention special hardware buttons. And these remotes differ, even within a single brand's lineup.

Considering all those buttons, you'd probably expect a lot of options for TV app developers. Not so fast. The only inputs you can rely on when designing for TV are the four directional buttons and the remote's selection button.

When it comes to TV interfaces, the directional buttons are your friends, because the less you force the user to look down at the remote, the better. A TV-watcher does not want to deal with complicated tasks, but instead is expecting to leisurely browse or quickly find the program they're looking for.

And don't forget about voice and gesture inputs. Many smart TVs now include a microphone and/or camera to track your movements and listen to commands. This brings a new set of input methods to consider. With gesture, you'll need to take into account variance – i.e. the shakiness of a person's hand while trying to select an item, and how long it has to be held up in the air to navigate.

With voice commands, the on-screen interface must display button labels for voice controls, including accents and languages, for both accessibility and learning curve improvements. Microsoft, for instance, limits the number of voice commands on Xbox apps. Once again, the aim is to be as simple and concise as possible in your design.

Hamburger issues Rather than choose between the hamburger icon and the label 'MENU', nGen Works combined the two

works out for your users. They typically don't know to look there – and even when they do, menus are difficult to navigate using traditional television input methods.

Instead, make sure your interface elements are front and centre, and their intent is obvious. Use straightforward labels, with icons to reinforce their meaning. The folks at nGen Works integrated the hamburger icon into the navigation on their site by replacing the 'E' in the 'Menu' label (*netm.ag/ngen-272*). Obvious and clever: the perfect combination.

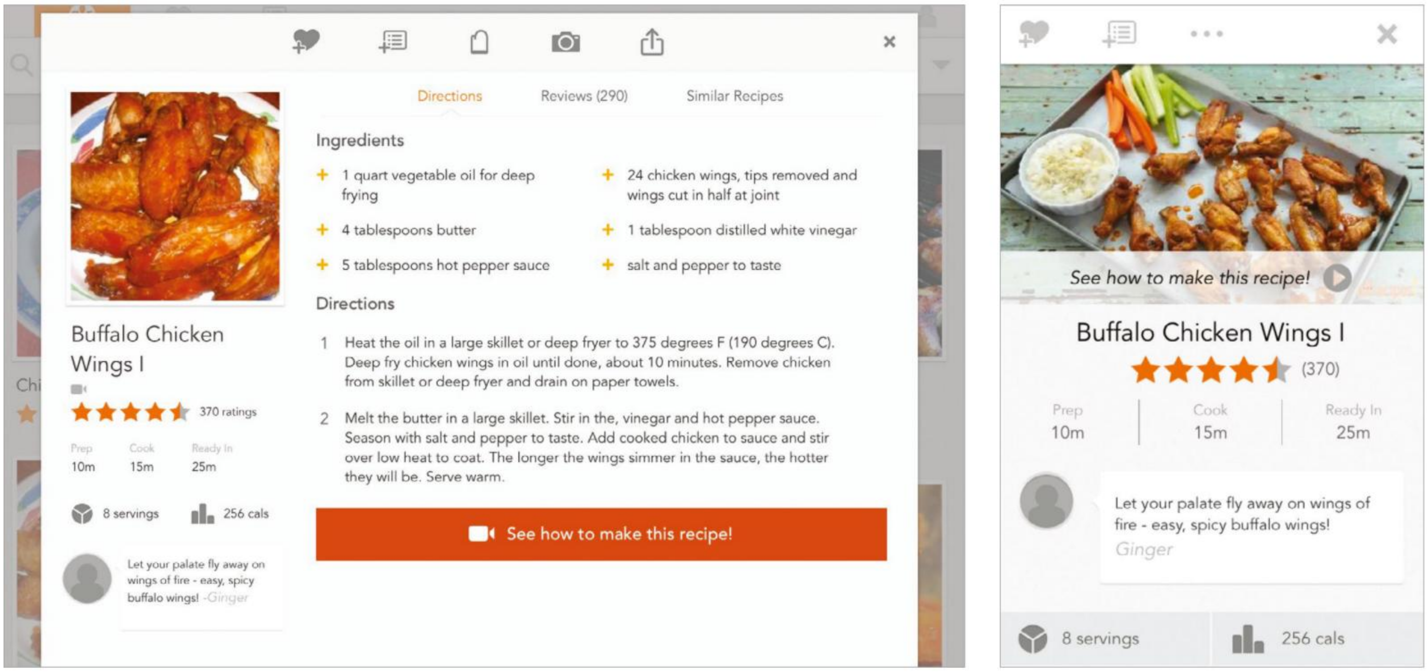
In fact, using the word 'Menu' rather than the hamburger icon can increase engagement by up to 20 per cent, according to New Zealand-based web developer James Foster (*netm.ag/menu-272*). These familiar three bars may not be as familiar as we think.

VALUE USERS' INPUT

The way that we interact with our computing devices is constantly changing. Keyboards, mouses and trackpads are commonplace and will be around for some time to come, but touch and multi-touch interfaces are now also widespread. So much so that our one-year-old already knows how to use our phones and tablet. With 350,000 new 'users' born every day, best practices for touchscreen interfaces should be a concern for every designer.

With multi-touch interfaces, the most common gestures are scroll, swipe and tap. Pinch to zoom is also commonly understood, but if it means zooming in and scrolling left and right, most people will tend to abandon what they're doing and look for another way to browse the site.

Best in class The Netflix brand and user interface translates well across numerous devices



Design shifts The AllRecipes app for iPhone and iPad both take advantage of their respective screen sizes

Touchpoints are also critical to your application's interface, as finger sizes range from toddler to hulk. Apple recommends a minimum 44 x 44px touch size to optimise the ease of tapping an interface element. Microsoft and Nokia recommend similar sizes in millimeters: 9x9 and 7x7 respectively.

But keep in mind that our applications are moving outside of the desktop and mobile realm and into our TVs, through set-top boxes and native smart TV apps, where the remote becomes the most common input device. And that can be a scary thought for designers.

FOLLOW THE THREE Cs

In the book *Designing Multi-Device Experiences* (*netm.ag/levin-272*) author Mihal Levin discusses what she calls the three Cs of design. She argues that consistent, continuous and complementary experiences are the key to dealing with design across a multitude of devices and screens.

Be consistent

Consistent design is important in two areas: the interface and the brand. Do I recognise the app when I switch devices, and do I feel confident I can pick up where I left off? When you use Netflix on your Apple TV and need to leave the house, can you easily find your way around the iPhone app? Netflix has done an incredible job of making sure its brand, interface elements and hierarchy of information translate well across the numerous devices it supports.

> When in doubt, follow expected device patterns and avoid breaking existing, learned behaviours

Speaking of TV, the screen layout is integral to helping your users accomplish their goals easily. Using consistent templates for TV applications reduces the learning curve considerably. Stick with two or three layout templates at the most, and make your navigational methods predictable.

But we can't all be like Netflix. When in doubt, follow expected device patterns and avoid breaking existing, learned behaviours. Android devices differ greatly from iOS devices, and their users should have a preconceived idea of what to expect from each. Consistency is especially important, considering 90 per cent of people use multiple devices in sequence to accomplish a task.

Continue the journey

Cooking a meal at home can be broken down into a few obvious tasks, including searching for a recipe, buying the ingredients and following directions. Let's map those tasks to common devices: we might use a computer at our desk to find and save the recipe, our smartphone to check off ingredients at the grocery store, and our tablet to watch prep videos and follow steps in the kitchen.

Remember that not every device is good at, or typically used for, each action required to accomplish a goal. It makes sense to highlight the tasks that are more likely to be done in each context, rather than making everything work exactly the same everywhere. Optimise the experience within the context of the task and play to the strengths of the device.

Keep it complementary

As we all know, our devices are not always used sequentially, as they were

TEST ON REAL DEVICES

Application development has got easier thanks to fantastic simulation tools, but there is no substitute for testing on an actual device. The experience of using a smartwatch app on your wrist, or navigating a television app with a remote control in your living room cannot be fully replicated using a hardware simulator on a computer.

Early Apple Watch development is a perfect example. Developers were creating applications for a device that didn't even exist, and using a simple simulator that provided a rectangle for their app to run in. But that rectangle didn't replicate the black bezel around every Apple Watch that acts as a buffer between interface elements and the edge of the device.

Without it, buttons and text ran to the edge of the screen and nothing looked right. On an actual Apple Watch, however, interface elements were given a sense of space, thanks to the hardware around the screen.

Designing for TV is the exact opposite. If you push your interface elements up against the edges of the screen, you're likely to lose them to any or all of the typical television safe zones. Smart TV apps must respect these varying soft areas around the outside edge of televisions in order to prevent cutting off text or buttons. It's just like print design.

Considering a video aspect ratio of 16:9, you can expect a resolution of 1920 x 1080px for television in most cases. But only the background images of your smart TV application should be expected to reach the full height and width of that screen. The action safe area is actually 1792 x 1016px, and the title safe area is even smaller at 1720 x 1000px, which is where you should plan on keeping content and interface elements.

Mobile first Watch your favourite TV show and buy a car from your mobile phone? It happens more often than you think

in the previous example. Perhaps you're watching a cookery show on television and want to find the recipe being cooked to save for later. Complementary usage comes into play here, and it's a big part of how we engage with the world. In fact, 77 per cent of TV viewers use more than one device at the same time, and nearly half of those viewers are using a smartphone.

The opportunity here to help people engage with the things they see on television is huge. Watching TV is no longer just a passive behaviour; we're always looking to learn more about the people, places or things we see.

77 per cent of mobile searches happen at home or at work, and 22 per cent of searches done from a smartphone were prompted by something seen on TV. That translates to a lot of mobile engagement, regardless of whether the people themselves are out and about. If your site or app isn't mobile-optimised, you're already missing out.

CHECK YOUR ENVIRONMENT

A person is generally two or three feet away from their computer monitor, and even closer to their smartphone. But for television, the average viewing distance is typically between 12 and 15 feet (often called the '10 foot experience'). This context matters, especially with TV, because doubling the viewing distance essentially halves the apparent size of an object, making 12 point type unreadable. To truly understand a device's limitations, you must experience it in its native environment. For example, designing a smart television app on a computer won't give you the same experience as seeing it for yourself at the right distance, especially when it comes to establishing things like the correct font and image sizes.

We should also be thinking about the physical environment surrounding any device interactions, not just viewing distance. Users sitting at a desk are mentally prepared to work through tasks using devices with the most capabilities (keyboard, mouse, connected devices). But sitting on the couch in front of a television lowers our tolerance for hangups, so simplicity and ease of use are even more important.

Exercise ring The Apple Watch displays fitness information in a way that is understandable at a glance

Moving about Switching between your Apple devices has become even easier with a feature appropriately called Handoff

START WITH MOBILE

By now you've heard of the mobile-first approach to RWD. Starting with mobile forces us to begin with the most constraints, to really think about the content and functionality we need to offer to our users. What will people absolutely need to do, and what's the easiest way for them to do it?

The other advantage of starting with mobile is that most people have a smartphone (and plenty consider it their only computing device). Mobile phones now outnumber people on this planet. So you can count on many of your users to be coming from a mobile device.

MAKE TRANSITIONS SEAMLESS

Considering how often we switch devices, moving from one to another should be less painful than it is. Cloud technologies such as Dropbox and iCloud are addressing this issue, but our software isn't there yet. Apple has decided this is worth looking into, and its Handoff technology in OS X and iOS (*netm.ag/handoff-272*) already allows apps to share data for easy transitions from one Apple device to another.

Nine out of 10 people use multiple devices to accomplish a goal, and almost all of them move between devices in the same day. It's our job to make that transition a smooth one.

THE SCREENS ARE COMING

Beyond the growing number of screen-based internet devices, designers must also consider the devices in our daily lives that don't have screens. This growing Internet of Things is bringing the power of connectivity into our home appliances, cars and even out onto the hiking trail.

> Designing mobile-first forces us to begin with the most constraints. What will people absolutely need to do?

Activity trackers like the Jawbone UP and Fitbit display very little visual information, relying instead on separate mobile apps and the vibration feedback on the device itself. And how do we make the data collected by these smart devices useful? Our software must make sense of it and present it in a way that is easy to digest and beautiful.

The Apple Watch uses an 'exercise ring' to communicate activity data. A quick glance at the watch face and you can see where you are with your calorie, exercise and stand goals for the day. You're welcome to tap on the rings for a more detailed view, but this overview is more than enough in most cases.

TALK AMONGST YOURSELVES

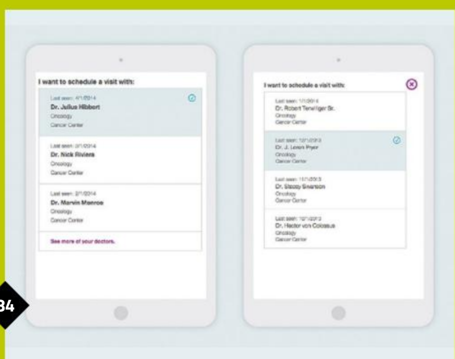
Finally, remember that your users don't use their devices in a silo, so you should avoid designing in one. Without open communication in the workplace, your product cannot succeed in the hands of your users. Make sure design teams throughout the entire company are sharing their experiences, goals and user research, and everyone is on the same page.

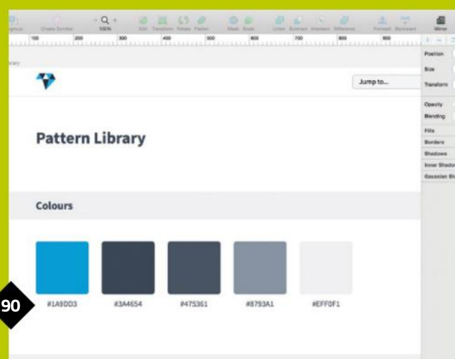
Design thinking must be done outside the box, and the screen. Today it's about evolving from app-focused design to an action-based ecosystem of connected devices. The future is now.

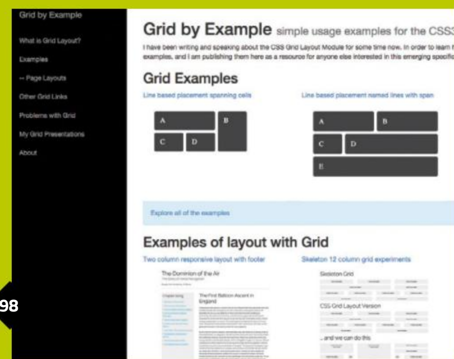
PROJECTS

Tips, tricks & techniques

THIS MONTH FEATURING...

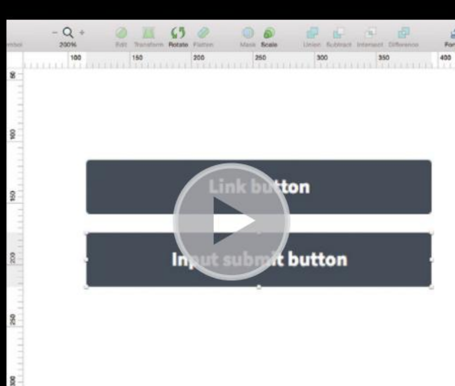






BROWSER SUPPORT

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



EXCLUSIVE VIDEOS

Look out for the video icon throughout our tutorials. This issue, three authors have created exclusive screencasts to complement their articles and enhance your learning, including Richard Child's walkthrough on building Sketch pattern libraries, and Rachel Andrew's introduction to the CSS Grid Layout spec.

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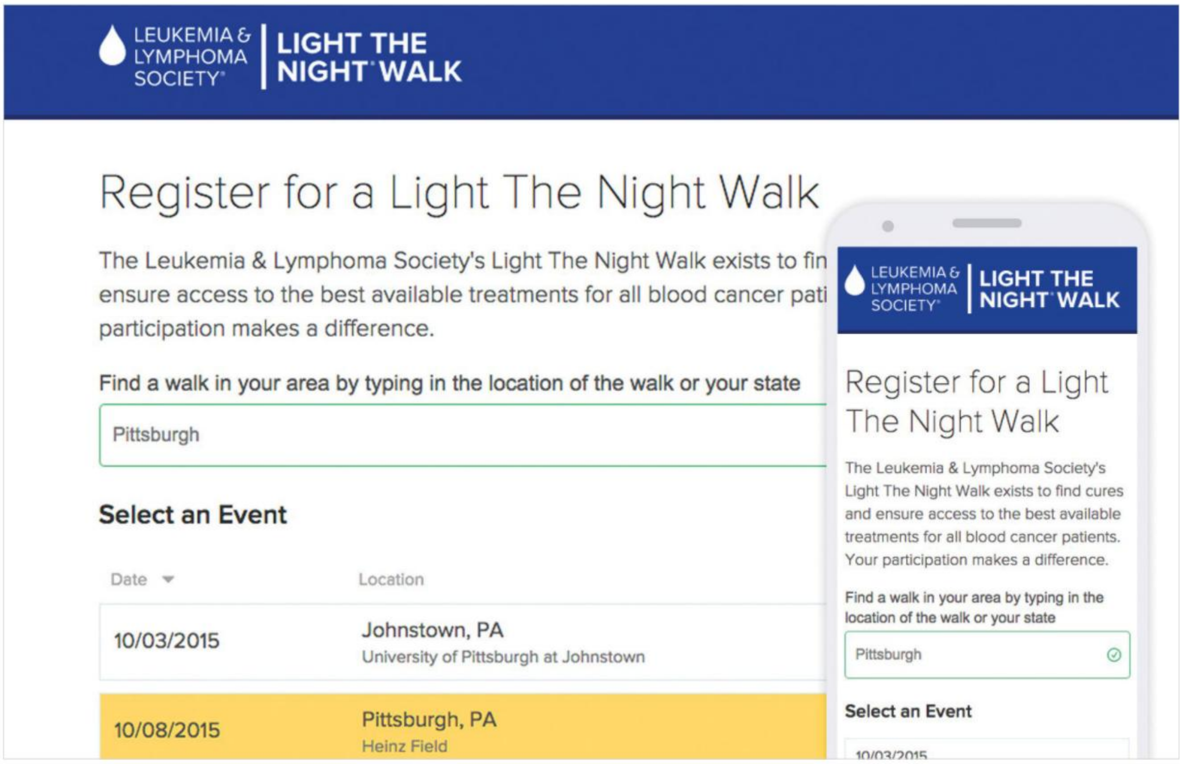


RWD

CREATE RESPONSIVE FORMS AND TABLES

Matt Griffin and **Patrick Fulton** tackle two of the most challenging design elements in RWD: forms and tables

Some years ago we started a small web agency called Bearded. In 2010 responsive web design completely changed how we work. Ethan Marcotte's simple yet groundbreaking approach pointed the way towards a web that embraces the constantly expanding world of mobile devices, ensures content parity, and takes progressive enhancement to its next logical step. Responsive web design directly responded to the problems many of us had already felt in web design: it had become too brittle, too precious and too pixel-specific. The web wants to be fluid, and it needed a fluid solution. And that's what we got.

Now it's 2015: about five years after RWD started being practiced commercially. We've made a whole bunch of responsive sites during that period. And you know what? It's still hard. Making the mental shift from a fixed-width world to a flexible one requires us to rethink many design patterns and user interface conventions.

Not surprisingly, the hardest parts of RWD are things that have always been kind of a pain: tables and forms. Let's have a look at why they are even more fun in a responsive environment.

TABLES

The first rule of tables? Don't use tables! But seriously, let's think about this for a second. I like to think of tables as kind of a pre-standards-conscious proto-HTML. Tables, by their nature, attempt to do

RESOURCE

The folks at Zurb have released their own CSS/JS solution to responsive tables, which plays well with Foundation and non-Foundation-based sites: *netm.ag/zurb-272* visual layout with HTML. Their rows and columns and endless table data cells break the cardinal rule of the post-web standards project world: the separation of style and content.

So before you start adding table tags to your markup, stop and ask yourself: is this tabular data? Tabular data derives its meaning from the comparison of similar facets of an information set. In other words, if the value in the information comes from comparing data across columns and rows. If this is the case, you may need a table.

Things that are not tables

If the data has significant value unto itself, maybe it doesn't need to be a table. Or at any

> **Tables break the cardinal rule of web standards: separate style and content**

rate, not always. Some other options to keep your content out of tables? Headings and paragraphs, or bulleted lists where each item begins with a bold inline heading.

Things that appear to be tables

A good example of something that may initially look like a table, but is not actually tabular data? A calendar! A calendar seems tabular because the columns share a common set of designations: Monday, Tuesday, Wednesday, and so on. It is a convenience that we can identify all the Wednesdays at once. This is why people use calendars.

However, the data you put on calendars (say a bunch of Broadway musical performances) is not intrinsically tabular. Comparing one day's shows to another's does not necessarily improve users' understanding of the performances on individual days. A calendar is one way to display date-organised data, but there are others too.

So what does a calendar look like on a small screen? We're asking the wrong question. The right question is: what does a list of events look like on a small screen?

This is how we arrived at marking up our days and events using `<divs>` and `<articles>` rather than tables on the Children's Museum of Pittsburgh website (*pittsburghkids.org/calendar*). It's much easier (and more semantically appropriate) to make a bunch of `articles` and `divs` look like a table, than to make a table look like a list.

▶

FOCUS ON

PRESENTATIONAL CLASS NAMES

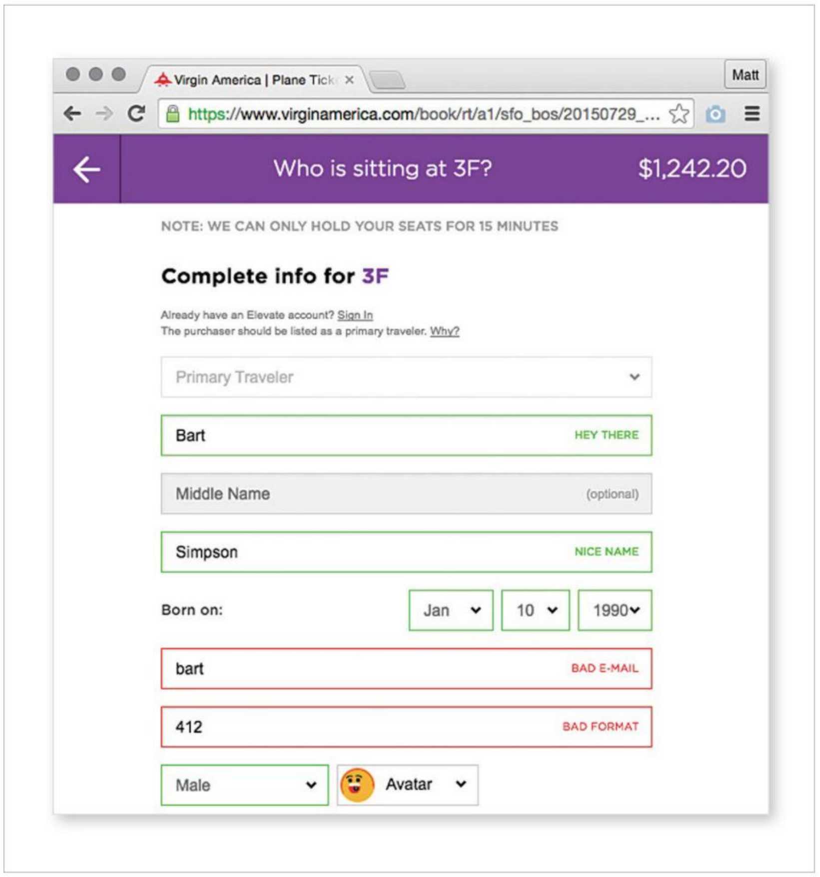
In general, we always strive for semantic class names. However, when dealing with large-scale, pattern-driven design and development, there are times when presentational naming makes more sense.

For instance, for form input layouts, we may need to employ some extra markup whose only purpose is presentational, to enable us to lay out elements on a grid. For this, the most semantically appropriate names are presentational ones. Let's look at the HTML (full example at *netm.ag/box1-272*):

```
<div class="two-up-wider">
 <div class="input">
  <label for="firstname">First Name</label>
  <input id="firstname" class="valid icon-valid" type="text"
value="Lisa" name="firstname" />
 </div>
 <div class="input">
  <label for="lastname">Last Name </label>
  <input id="lastname" class="valid icon-valid" type="text"
value="Simpson" name="lastname" />
 </div>
</div>

<div class="two-up-wider">
 <div class="input">
  <label for="address1">Address</label>
  <input id="address1" class="invalid" type="text"
name="address1" />
  <span class="validation-text invalid">invalid</span>
 </div>
 <div class="input">
  <label for="address2">Apt. / Suite / Unit
   <span class="optional">(optional)</span>
  </label>
  <input id="address2" type="text" name="address2" />
 </div>
</div>
```

In this case, we're giving the container `<div>`s around our sets of inputs classes like `"two-up"` and `"two-up-wider"`. Each set of labels and inputs within is wrapped in a `<div>` with the class `"input"`. This allows us to easily and programmatically style our forms simply by using consistent layout-based classes. Give a set of inputs the right class, and they behave accordingly.



Helpful and personal Virgin America's website offers helpful and succinct form validation messages with great personality

Things that must be tables

As much as I hate to admit it, some information *is* tabular. When designing the fundraising event registration process for the Leukemia Lymphoma Society (*registration.lightthenight.org*), we used tables for event selection. Quickly scanning and sorting this list by location and date in order to choose the particular event you want to register for seems like a good use case for tables. But how to make them responsive?

Our investigations into responsive tables started with Chris Coyier's excellent April 2011 responsive data tables roundup: *netm.ag/coyier-272*. For several projects in the past few years we'd consult this article and inevitably, Chris' first approach (*netm.ag/winner-272*) was the winner.

On wide screens, you get tables. On smaller screens, you get each entry with all of the header labels restated for context. You lose the comparative feature of tables on small screens, but you do get the essential information in an easily readable way. In other words, we treat the tabular layout as a progressive enhancement. This is our favourite UI pattern for responsive data tables, and it seems like our friends at Filament Group agree with us. In August 2013 the Filaments released Tablesaw (*github.com/filamentgroup/tablesaw*) on GitHub, which includes this pattern as one of its three options. Tablesaw is the starting point for the LLS example, and I highly recommend using it as a jumping-off point for creating your own responsive data tables.

So if Tablesaw works so well, why wouldn't you just use that all the time and forget about it? Though some major interface or display tables (like the event picker example, or maybe an SaaS pricing matrix (*smallfarmcentral.com/plans*)) make sense as custom HTML, what about when a site content manager wants to toss a table onto a page using their CMS?

If site managers are entering tables in the CMS using a WYSIWYG editor, there are some issues to surmount. First of all, Tablesaw does its magic by looking at the <thead> and using what it finds there to label the information further down in the <td>s on smaller viewport widths. If the site manager isn't entering <thead> information properly, things won't work.

It's also important to note that Tablesaw only acts on tables with the right classes applied to them. You now need to decide if all tables are Tablesaw tables, or if that's an option in the CMS controlled by the site manager, then apply those rules in your CMS so it outputs the right markup.

Additionally, there are some display issues to consider. Repeating the column headers in every cell tends to add a fair bit of height to the table. It's not a very efficient way to display the data. A non-tabular approach using headings, lists and paragraphs could be an easier read on mobile, depending on the content.

This is why my first approach to tables is still 'don't use tables'. Tablesaw should be your safety net, not your go-to tool. But believe me, you'll be glad it's there when you need it.

FORMS

It's likely tables have been a thorn in your side on projects before. But their persnickety nature is nothing compared to our other good high-maintenance HTML friend: forms.

Because forms are so browser and device-specific in terms of how they react to styling, they can be a real challenge to work with. To paraphrase Luke Wroblewski, forms drive one of the most essential aspects of the web: the ability to generate revenue. Yet filling out a form is the last thing anyone wants to do on a website. Thus, forms make for a fun set of design problems. Let's have a look, shall we?

LAYOUT

When it comes to laying out forms, there are a few recurring patterns we use. For consistently short pairs of inputs, we use a pattern that we call two-up. It's pretty straightforward. No matter the size of the viewport, these inputs appear side-by-side. For inputs that need a little more space, but can be next to each other when they have enough room, we use the pattern two-up wider. There are rarely situations where three-up – three side-by-side inputs – always works. So by default, we have that work on the wider principle.

One special case for three-up is postal code, city and state. Because of the nature of these fields, custom unequal widths better serve their purpose. Their styling works on the same principals as before, but with a bit more customisation for the unequal widths we want to achieve with postal code, city and state combos.

You might have also noticed that we're starting the cluster with the postal code field. Both Luke Wroblewski and Brad Frost have shared a great approach where the postal code comes first (*netm.ag/postcode-272*), allowing us to autofill state and city, which is much more efficient for users.

With imput messages, brevity is important. The most brief response possible? Icons!

VALIDATION

No matter how good our forms are, sometimes users will have a tough time filling them out. This is where good validation comes into play. For input validations, we like to consider two components: messages inside the input and messages outside the input.

Inside the input

The thing to consider with messages inside the input is space. You can't, for instance, prompt a user with password requirements inside an input. But there is likely enough room for 'invalid' – and there is definitely enough room for a happy green checkmark when they get it right.

One of my favourite parts of Work & Co's Virgin America's responsive redesign (*virginamerica.com*) is how it deals with form validation. It's good at communicating a helpful validation message succinctly (e.g. 'bad email').

With responsive and small screens, brevity is important. The most brief response possible? Icons! And we designers do love our icons. The only problem is that most icons aren't universally understood. For success with a form field, that green checkmark is probably fine. But how should we indicate failure? A red 'X'? But 'X' in an interface means close or collapse. The word 'invalid' is OK, but a whole lot longer than most icons.

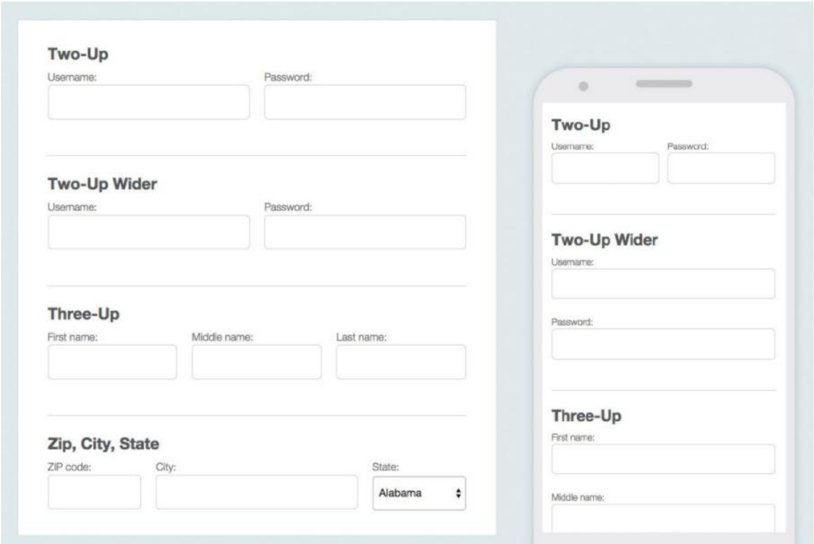
If the tone and personality allows it, a frowny face seems relatively clear. But many brands aren't as playful as Virgin America. In our work at Bearded we've settled on an appropriation of the 'do not enter' sign. Its similarity to iOS's 'remove item' icon isn't ideal, but it's the best solution we've come up with so far.

One thing about responsive design and progressive enhancement, though: we can implement an icon where space is at a premium, and expand to an inline validation message like 'invalid' or 'bad email' when we can afford the extra width.

Outside the input

When we need to display feedback to a user beyond what we can cram inside an input (or when elements like selects are involved), it's time to start using messages outside the input.

In those circumstances, you can use both kinds of validation. For example, you can add an inline 'invalid' message, then below the input tell users the longer story. In this space, you even have the luxury of providing links to enable users to perform alternative actions (e.g. 'Sorry this email address is already used with an account. Try signing in'). ▶



Two-up At Bearded, we use certain responsive layout patterns over and over again for form inputs

RESOURCES

FURTHER READING

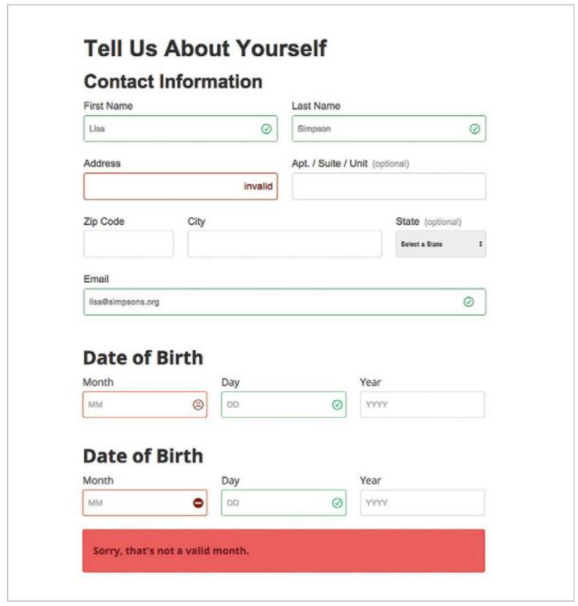
Forms and tables are hard. Luckily, some very smart people have written down their thoughts to share with you. Here are a few of our favourite examples:

Web Form Design
rosenfeldmedia.com/books/web-form-design
Luke Wroblewski's book belongs in every web designer's library. In it, he takes an analytical look at what may be the web's most important and vexing component, offering real world examples and a variety of solutions to common problems. If you don't have it, buy and read it now.

Tablesaw: A Flexible Tool for Responsive Tables
filamentgroup.com/lab/tablesaw.html
The Filaments have given us a lot of great solutions over the years, but Tablesaw is one of the ones we use the most often – it gives you three very good options for displaying data tables in a responsive manner. Mat Marquis and Zach Leatherman give you a rundown in this helpful blog post.

Dropdowns should be the UI of Last Resort
lukew.com/ff/entry.asp?1950
When you talk about web forms, that Luke Wroblewski really seems to come up a lot, doesn't he? His quick but insightful look at selects is great at reminding us that plenty of modern UI options out there are superior to the old drop-down.

Why and how we ditched the good old select element
netm.ag/select-272
Mikkel Bo Schmidt lays out Tradeshift's travails with the select element, which ultimately led the company to ditch it from its product altogether. This article was instrumental in helping us down a path that ultimately arrived at our prioritised selector design. Definitely worth a read!



Form validation For our work on the Leukemia Lymphoma Society websites, we tried a number of approaches for form validation

Regardless of your approach, form interactions are a subtle art. I would encourage you to run usability testing on your prototypes as you go. Spending a week trying things out with five users can give you a wealth of information about how things are (or are not) working, before you go live.

DATES

One of our favourite input use cases? Date selection. Why? Because it's so hard to do well! Let's say users need to select a date to make an appointment in the near future. Some things to consider:

Date.js allows users to enter dates however they want. Slashes, dots, spelled out ...

- Users must be able to input the date in a format the database on the other side will be happy with
- Users need to know which day of the week a date is as they consider their schedule

Sounds like a calendar picker is the way to go. But calendars on small viewport are the worst, right? Luckily pickadate.js (*amsul.ca/pickadate*.js) does a good job of handling this problem. With a few UI customisations, your calendar picker is good to go.

That's great for near-future date selection. But what about selections in the distant past – for instance, birth date? You'd have to click your way back decades using the previous month button. How odious! Thankfully, for this sort of interaction day of the week is irrelevant, so the only real challenge is formatting. So what to do? You could try to explain to users what to do using hint text. Except that, well, no one reads hint text.

OK, so we can force formatting choices with three select inputs – one each for month, day and year. That day select input with its 31 options is no picnic – but it's a dream compared to the year select going back to 1915.

Fear not, for natural date entry is a problem that's been solved. Date.js (*netm.ag/date-272*) allows users to enter dates however they want. Slashes, dots, or hyphens; abbreviated or spelled out. What's more, it confirms the output with you using a handy validation message, and tells you day of the week, for kicks.

So … dates? Feels good man. But let's roll back to selects for a second.

SELECTS

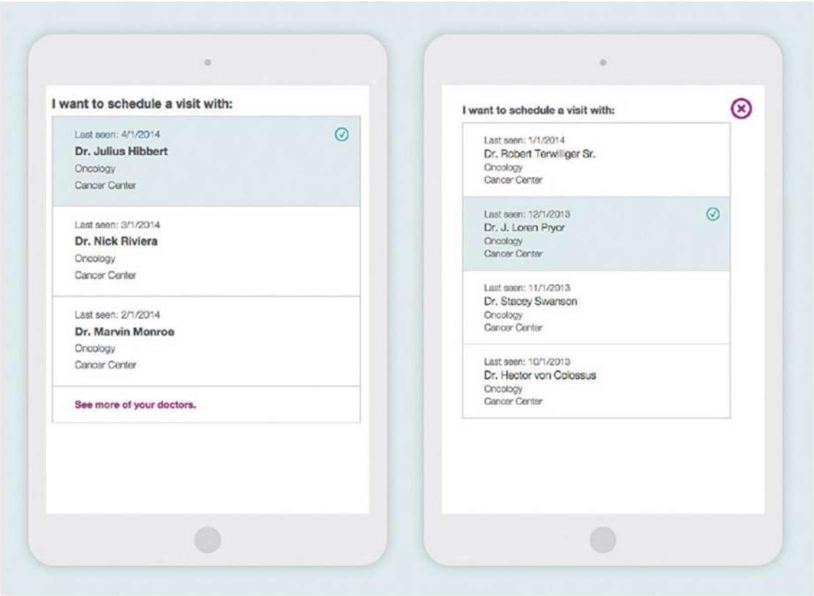
Even for form inputs, selects are kind of a bugbear. Styling those son of a guns consistently across browsers is nigh on impossible. Chris Coyier has put together a great write-up of the common pitfalls and limitations (*netm.ag/tricks-272*). At Bearded, our standard approach to selects is to match up their height to other inputs, but otherwise pretty much leave them alone.

It's worth noting that the Filament Group has made a heroic attempt at cross-browser select styling, available on GitHub (*netm.ag/cross-272*). However, although I love the idea of gaining styling control over these little troublemakers, my personal feeling is that this kind of approach is a bit on the brittle side.

Long selects

The worst situation for selects? When they get long! The fine folks at Harvest were nice enough to release some of their custom select approaches to help you with this, in the form of jQuery plugin Chosen (*harvesthq.github.io/chosen*). One of these approaches provides a searchable select that helps users reduce the number of options in front of them. And thanks to Nathaniel Flick, they've been responsivised: *netm.ag/responsiveselect-272*.

Chosen has some super-fun features, but it can, like any select-replacement approach, lead you down some rabbit holes. Be careful not to make things more complicated than you have to.



Complex selectors This complex select UI allows users quick access to prioritised options (left), with modal access to additional options (right)

Complex selects

Recently we worked on a project for a healthcare provider in which users needed to select from complex groupings of information. There was a list of doctors, their names, the doctor's area of specialisation, their office location, and the date they last saw the patient.

Complex information like this will not fit into a standard select element, so we tried something else. The solution we came up with is something we called the prioritised selector. In it, we show the user the first few options, prioritised by some specific criteria (most recently visited, for example), as well as the option to view more.

When a user selects the 'view more' option, we open a full-screen modal interface that lets the user select from the full list. Though it adds an extra click when a user needs to access doctors they haven't seen in a while, this ultimately seemed like the best approach for the use cases we were accounting for.

LET'S FACE IT: THESE THINGS ARE MESSY

Tables and forms are complex by nature. No matter how much we work on them, they might never be easy. And as the environment we deploy them into grows ever more complex, so will the design problems they represent.

But isn't that the fun of web design? As we solve the problems that are there to be solved (and thus the threat of boredom and complacency rears its ugly head), the web always seems ready to mix it up again, keeping us on our toes. And thank goodness for that.

RESOURCE

Zoe Gillenwater's excellent 'Enhancing Responsiveness with Flexbox' presentation explains how flexbox can help enhance the layout of your forms: *netm.ag/gillenwater-272*

View source files here!

All the files you need for this tutorial can be found at *netm.ag/pattern-272*

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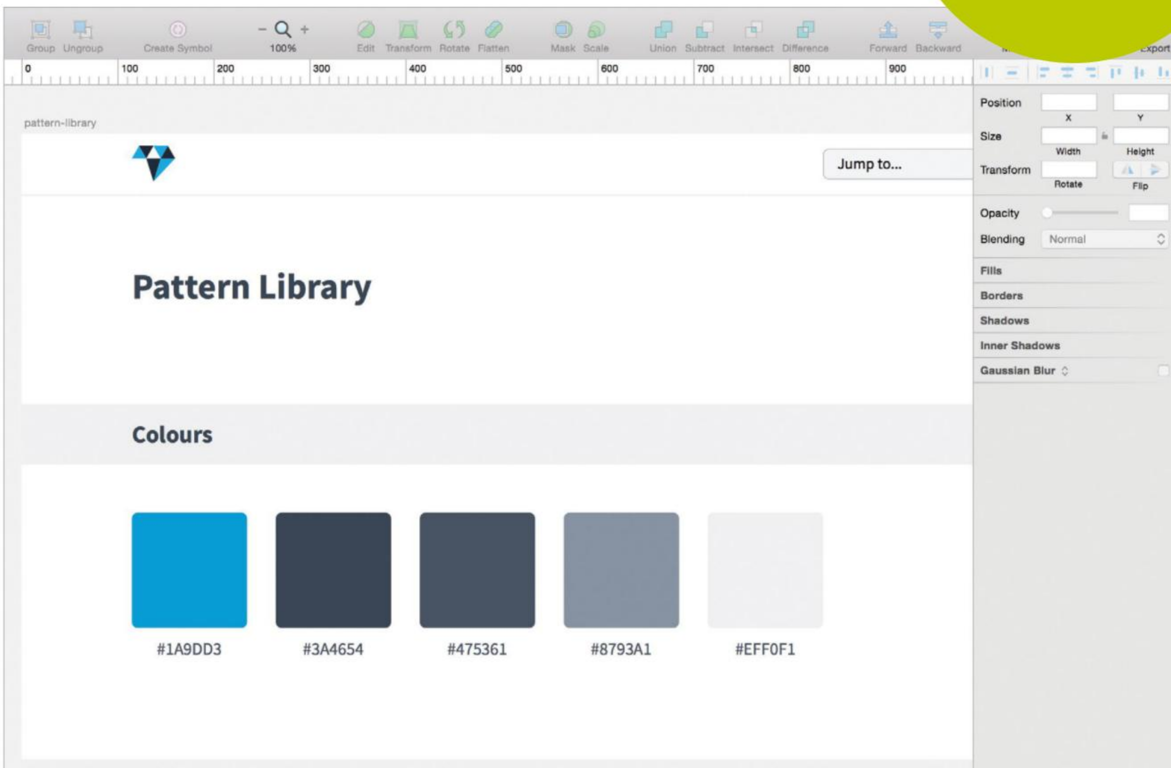
q: what's your guiltiest pleasure?

a: I'm a big snooker fan and try and watch it on TV whenever possible!



SKETCH

BUILD A PATTERN LIBRARY IN SKETCH

Richard Child explains how to create a pattern library with Sketch, ensuring your site's design is consistent and reusable

Have you ever struggled with consistency in web design? This happens all too often, especially when working at scale. Luckily for us, pattern libraries are here to help! A pattern library is a collection of user interface design elements that can be reused to build pages. Examples include navigations, buttons, paragraphs, headings and forms. By designing individual elements instead of complete pages, we're actively encouraging reusability, resulting in designs that are consistent and easy to maintain.

Before implementing a pattern library, we must ensure that our design tools can handle reusable elements. For the past two years my go-to design tool has been Sketch: a lightweight, vector-based tool perfect for interfaces and pattern libraries. Why is it perfect? I'll give you an example.

Let's say you have a button element that is used multiple times throughout a website, then decide to change it. Normally you'd have to go through and manually change each instance of that button. Not with Sketch. The software includes a feature called Symbols: a special kind of layer group, in which any changes you make to a symbol are automatically applied to all its other instances. It's perfect for working with reusable elements.

OK, enough of me singing Sketch's praises. Let's dive into the tutorial! Don't have a copy of Sketch? Simply head over to *bohemiancoding.com/sketch* and download the free trial.

VIDEO

Richard Child has created an exclusive video to go with this tutorial. Watch along at *netm.ag/patternvid-272*

01 Before we begin, ensure you have the free Google font Source Sans Pro (*netm.ag/sourcesans-272*) installed. Create a new document, then insert a new artboard by going to Insert > Artboard (keyboard shortcut: A). An artboard is a fixed canvas that we'll be using as our screen size. You'll notice 'Artboard 1' has been added to the layer list on the left. In the Inspector panel on the right, set the Width to 1280px and the Height to 2000px.

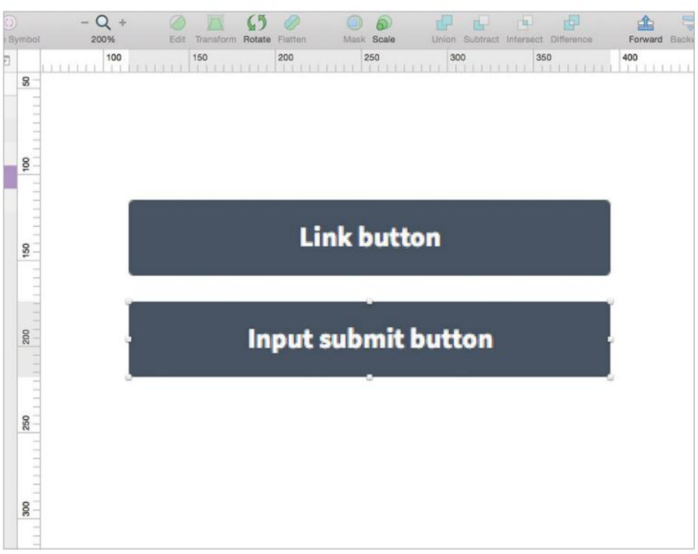
02 Now to create our grid. With Artboard 1 selected go to View > Canvas > Show Layout (keyboard shortcut: Ctrl+L). You will see a default grid appear. Now we just need to edit it. With Artboard 1 still selected, go to View > Canvas > Layout Settings . Set Total Width to 1080px, Number of Columns to 12, Gutter Width to 30px and Column Width as 60px. Make sure Gutter on outside is checked. Click the Center button.

03 Now we have our artboard and grid set up, it's time to add some content. For this tutorial, we're going to be creating four different types of pattern library elements. Let's start with buttons.

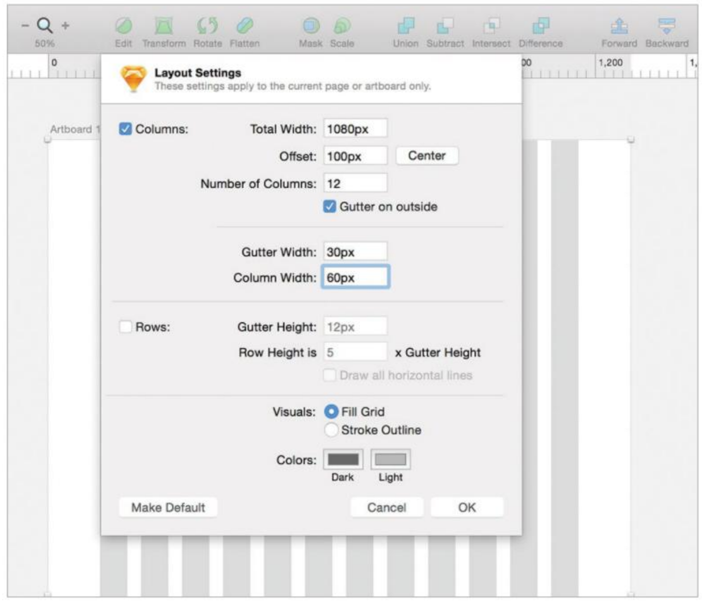
To create the button background, go to Insert > Shape > Rectangle (keyboard shortcut: R). In the Inspector, set the Width to 280px and the Height to 44px. Set the Radius to 3px and the fill colour to #1A9DD3 .

04 Now to add the text. Go to Insert > Text (shortcut: T). Change the Typeface to Source Sans Pro, Weight to Bold, Color to #FFFFFF, Size to 16pt and click the centre align icon. Position the text so it's centred inside the background. Select both layers and go to Arrange > Group Layers (keyboard shortcut: Cmd+G). With the group selected, go to Layer > Create Symbol . You'll notice that Sketch is prompting you to name the symbol, so enter Button . Symbols can be recognised by a purple layer icon.

05 Any changes made to a Symbol, like the one we just created, will be applied to all other instances of that Symbol. The only problem is that if we change the button text inside the Symbol, it will alter the text of all other buttons. To prevent this from happening, select the text layer and check the box Exclude Text Value from Symbol in the Inspector. Now let's create a duplicate button. Go to Insert > Symbols > Button .



Step 6 Thanks to Symbols, you can sync the visual styles of two buttons, but not the text



Step 2 The Layout Settings dialog enables you to adjust settings for the artboard

06 To see Symbols in action, change the background colour of one button. Notice how the colour changes for both. But if you change the text of one button, the text of the other doesn't change. Only the styles are in sync, not the text strings. This means, for example, we can create Sign up, Buy now and Contact me buttons that all share the same style.

07 Before moving on, it's important to be aware of how measurement works in Sketch. Select one button, hold down Alt and hover over the second button to show the distance between them. This is not only a feature that designers will use all the time but one that's perfect for developers who regularly have to calculate exact pixel measurements.

08 Next up, headings. As headings are reusable text elements, it's important to use the Text Styles feature instead of Symbols. Insert a text layer and ▶

✱ EXPERT TIP

SYMBOLS

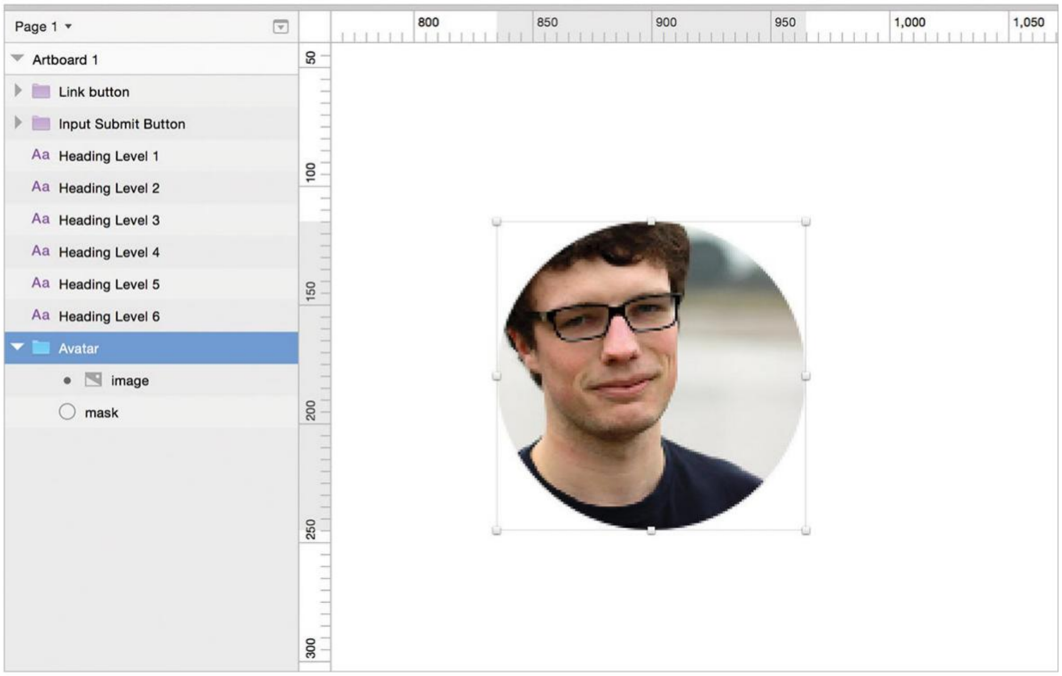
Find it annoying that, when you update an element like an input field in one of your designs, you have to go through and manually change all the other input fields throughout your document? Then you're going to love symbols! A symbol is simply a group of layers that are in sync. When you update the symbol, the changes are applied to all the other instances. This makes symbols perfect when working with reusable elements!

type Heading Level 1. Change Typeface to Source Sans Pro, Weight to Bold, Color to #3A4654 and Size to 37pt. Go to Layer > Create Shared Style. In the Inspector, you will notice that there is text highlighted. Sketch is prompting you to name the text style, so enter H1.

09 Repeat the last step to create your H1 to H6 elements. My heading font sizes are H1: 37pt, H2: 31pt, H3: 25pt, H4: 21pt, H5: 18pt and H6: 15pt. As each heading is a text style, any changes will be applied to all other instances of it. I've used Jeremy Church's Type Scale tool (*type-scale.com*) to determine the size of my headings. Type Scale uses the modular scale to choose proportional font sizes, depending on the ratio you select.

10 To organise the text styles we've just created, go to Insert > Styled Text > Organise Text Styles. Here you can delete and rename text styles but not reorder them. As text styles are ordered alphabetically, I name similar elements with the same first word: for example, List Unordered and List Ordered. Follow the same process for organising symbols. OK, we've tackled buttons and headings! But what about images?

11 For avatars, insert an image and rectangle that both have a Width and Height of 130px. Give the rectangle a Radius of 65px. Group both layers and position the rectangle behind the image. Right-click on the rectangle layer and select Use as Mask. We now have a circular avatar. We've used a rectangle with a radius setting instead of an actual circle because if you want to make the avatar square, you can simply edit the radius instead of inserting a new shape.



Step 11 Using a rectangle with a corner radius setting for your avatars in place of a circle makes the shape more easily editable

12 But what if I want to replace an image, I hear you ask? OK, maybe you weren't asking that, but it leads me onto a neat feature, appropriately named Image Replace. Select your avatar and go to Layer > Image > Replace. Choose a different photo. Sketch will automatically resize the new image and switch it with the existing one. You'll use this more often than you think: it's another great time-saver!

13 An alternative to inserting your own images is to use the Content Generator for Sketch plugin by Timur Carpeev (*netm.ag/contentgenerator-272*). Simply create a shape and go to Plugins > Content Generator Sketch Plugin > Persona > Photos. It pulls the user photos from User Inter Faces (*uifaces.com*), and inserts them as a shape fill. The Sketch plugin community is great.

14 Next up, colour swatches! It's important to document commonly used colours in our pattern library. Insert a rectangle with Width and Height of 120px, and give it a fill colour of #1A9DD3. Repeat this step with the colours #3A4654, #475361, #8793A1 and #EFF0F1. There's also a plugin for creating colour swatches by Jody Heavener (*github.com/jodyheavener/Swatches*). Go to Plugins > Swatches and enter the five hex values above.

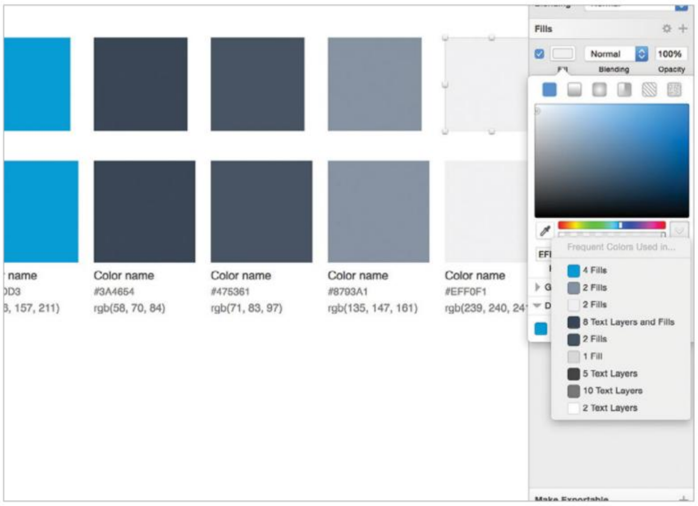
15 Select a swatch and click on the fill colour in the Inspector. At the bottom of the colour picker, you'll notice two sections: Global Colors and Document Colors. Global colours will be saved for all Sketch documents you create, whilst document colours are unique to, well, each document. By adding colours to the document colours section, you're building up your own colour library.

16 Aside from document colours, Sketch also

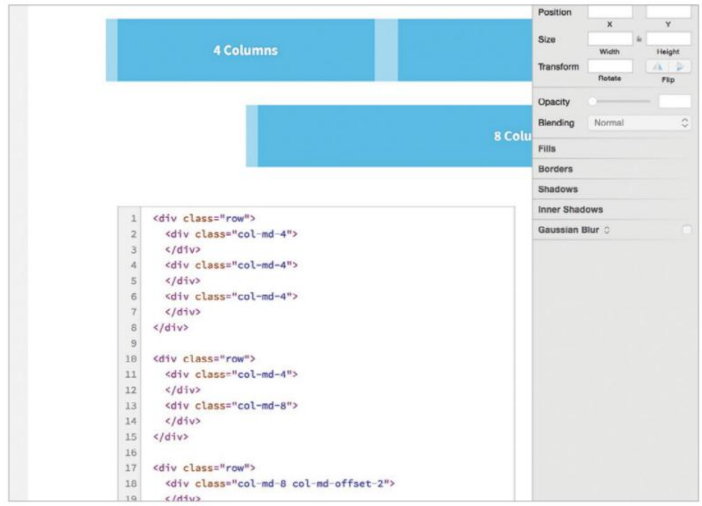
EXPERT TIP

TEXT STYLES

If you want to make sure that all your H1 text layers stay the same style throughout your document, make sure you're using the Text Styles feature and not Symbols. To create a text style, select a text layer and go to Layer > Create Shared Style. Sketch will then prompt you to name the text style. If you change the font size, line height or other properties for that text layer, the same updates will be made automatically to other instances of that layer.



Step 16 Sketch's Frequent Colors Used in… option is a great hidden feature in the software



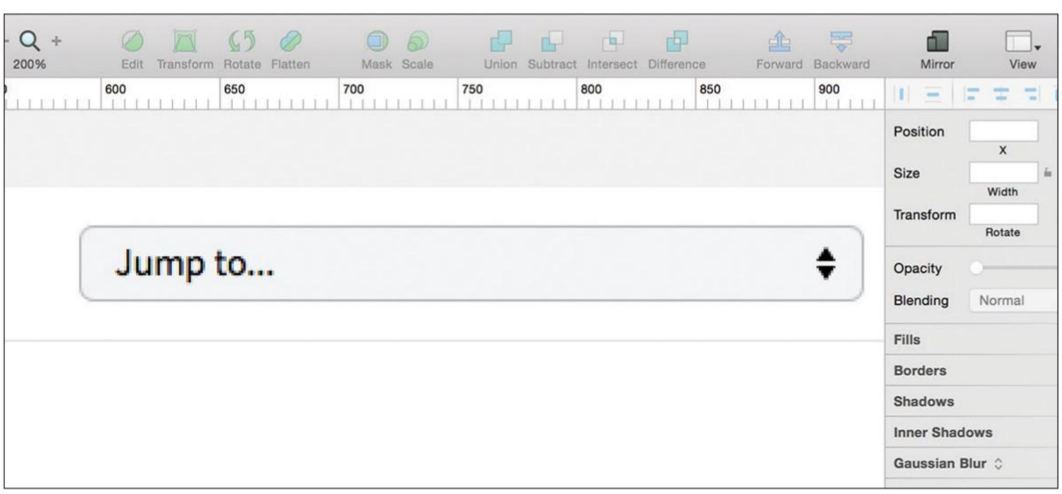
Step 17 A sample pattern library, provided in the download for the tutorial

automatically picks out common colours in your document and indicates how often they've been used! This feature is hidden from view, but can be accessed from the colour picker. Click on the area to the right of the hue and opacity sliders. You'll see a popup titled Frequent Colours Used in… . Not only does Sketch tell you how often the colour has been used but where.

17 For the final steps, please download the resource that accompanies this tutorial (*netm.ag/patternlibrary-272*) and make sure you have the font Source Code Pro installed. In the resource, HTML is included alongside each element. This ensures that the correct HTML tags and class names are used for development. Usage notes can be provided where appropriate. A great example of this is in the grid system, where it's useful to have information on column classes, offsetting columns, and so on.

18 In the resource, you'll also notice that the header has a Jump to… selector. Pattern libraries can be long, so it's important that your team members are able to quickly jump to an element without having to scroll through the whole page. An example of this can be found on the A List Apart pattern library (*patterns.alistapart.com*) and Anna Debenham's pattern library (*style.maban.co.uk*).

19 That's it! You now know how to work with pattern libraries: all you need to do now is find inspiration for a library of your own. I highly recommend visiting Website Style Guide Resources (*styleguides.io/examples.html*) by Anna Debenham and Brad Frost, where you can find lots of great articles, tools and examples.



Step 18 The Jump to… selector in the style library enables team members to navigate elements faster

EXPERT TIP

PAGES

It's common practice to break down a design into pages, and previously we'd create different documents for each page. But with Sketch, you can create multiple pages inside a single document. Aside from performance, the biggest benefit is that symbols and text styles can sync across pages but not across documents. Pages can be found just above the layer list. From there, you can add, reorder, rename and delete pages. You can also drag artboards between pages. The layer list shows layers for the current page only.

[Download the files here!](netm.ag/polygon-272)
All the files you need for this tutorial can be found at *netm.ag/polygon-272*

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q: what's your guiltiest pleasure?
a: Pork scratchings – specifically with a little bit of hair on

CSS

GET CREATIVE WITH CSS POLYGONS

In Pieces creator **Bryan James** shows you how to use CSS clip-path polygons to create an animated fan design

For a long time, the fundamental structure of rectangular blocks and circles which forms websites has plagued designers and creative developers alike. So when CSS `clip-path` polygons came onto the scene in WebKit browsers, I was immediately burning with excitement.

Used primarily to wrap text and mask content, the property also offers designers a chance to create more exciting shapes in pure CSS, without the need for canvas or SVG. I felt it could change the way I design and develop, with results which wouldn't take long to have an impact.

`Clip-path`'s primary purpose is to mask a region (not just images but actual content), but in this tutorial I'm going to delve specifically into what can be done with the polygon property. I'll take you through how Sass `for-loops` can be used to create sweeping transitional effects, and bring a collection of CSS polygons to life.

CREATE THE SET OF DIVS

What we're aiming for is an effect in which a set of triangular shapes fan out from a central point (check out the Codepen for this tutorial at *netm.ag/polygon-272*). First you need to create `div`s for as many polygons as you require (here I'm using seven), and place them on top of each other.

```
.polygon-wrap {
  div {
    position: absolute;
    width: 500px; height: 275px;
    top: 0; left: 0;
  }
}
```

CREATE THE POLYGONS' FIRST STATE

We are going to transition the polygons so the fan grows from the middle outwards. To do this, we first want to define the polygons' original state. We'll add a background colour, which will automatically be masked within the shape you create:

```
.polygon-wrap {
  div {
    -webkit-clip-path: polygon(50% 95%, 50% 95%, 50% 95%);
    background-color: #46008C;
  }
}
```

ANIMATION TRIGGER

You'll need a movement trigger in order for the transition to occur. Here, we will simply place a `hover` state on the wrapper element.

```
.polygon-wrap:hover { }
```

CREATE POLYGONS

Rather delightfully, CSS polygons are created using just a single line of code. Polygons can take any form you like: they aren't bound to any number of points or sides. However, if you're transitioning a shape like we are here, remember to use the same number of points, and to use the same point within the array to animate each following point:

```
..polygon-wrap:hover {
  div:nth-child(1) {
    -webkit-clip-path: polygon(19% 42%, 26% 32%, 50% 95%);
```

RESOURCE

Take a look at Bryan James' award-winning In Pieces project at *species-in-pieces.com*

```
    }
}
```

This polygon takes a triangular shape that forms the left side of the seven-part fan. The percentage values align to an X and Y co-ordinate, based on the size of the parent `div`.

TRANSITIONS VIA FOR-LOOP

After you've created your polygons' second states, you can create a sweeping set of transitions using Sass `for-loops`. These cause each `div` to animate slightly slower than its predecessor, creating a 'blending' feel. This also boosts performance, as the processor is doing one thing after another, rather than seven things at once.

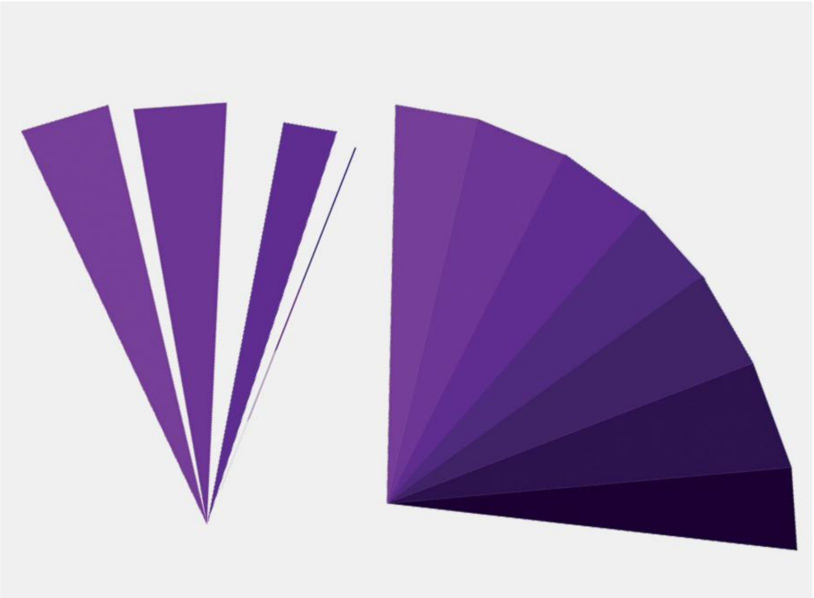
```
.polygon-wrap {
    div {
        transition: 0.2s;
        @for $i from 1 through 7 {
            &:nth-child(#{$i}) {
                $tdelay: ((($i*0.1))+0.2s);
                $tduration: ($i*0.05 + 0.25s);
                transition-delay($tdelay);
                transition-duration($tduration);
            }
        }
    }
}
```

Sass for-loops cause each div to animate slightly slower than its predecessor

This bit of code essentially creates the difference in timing for each of the `div`s. The initial buffer is the transition 'base' (here, 0.2 seconds). Next, there is a delay value (0.1 seconds). This value is multiplied by the order number of the `div` (from one to seven) to give the `transition-delay`.

IN PIECES

In a personal project, In Pieces (*species-in-pieces.com*), I used this same polygon property to create images of 30 different endangered animals, each composed of 30 triangular 'pieces'. I used base CSS transitions to blend from animal to animal in a sweeping motion across the screen. The animals seem to transform into one another; an effect created using the transition delays discussed in this tutorial.



Fan effect We're creating a fan effect, in which each of the seven triangular polygons animates out from a central point

Within In Pieces, the movement is created sequentially. `div` elements are given child index integers, which are then multiplied by a certain value to give the delay time. I used 30 `div` elements to contain the 30 individual polygons. I then introduced a transition delay of 0.1 second, so the 10th polygon animated after one second (0.1 x 10) and the 30th polygon transitioned after threeseconds (0.1 x 30).

SHIMMER EFFECT

These delays were also used to create a 'shimmer' on the animals, which can be seen every few seconds. The sequence of delays allows a simple opacity switch on all the elements, creating a sweeping gleam akin to the effect of light on glass. This is a very specific example, and the use of such delays is not only restricted to CSS polygons.

What these delays specifically achieve is an element of fluidity to the movement that creates a far more natural-feeling animation. It is a subtle, but hugely rewarding touch. Without this blending, a set of polygons turning into something else can be very harsh on the eye. It also makes for better performance as there are fewer simultaneous movements occurring.

CONCLUSION

There you have it! This is a great way of producing sequenced movements with polygons. There are plenty of exciting creative possibilities to explore with CSS polygons, so play around and see what you can do with these shapes.

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q: what's your guiltiest pleasure?
a: Creeping up behind my cat and scaring the bejesus out of him

FACT FILE

Node.js and Go were both released the same year but with the runaway success of JavaScript in recent years, Go took a beating in market share. Go is, however, used in a lot of production services at Google, and powers Deis, Docker and many other powerful open source services.

✱ HEAD TO HEAD

NODE.JS VS GO

Dave Mackintosh compares the ever-popular Node.js to Go, Google's resurgent high-performance programming language

NODE.JS	GO
Node.js (*nodejs.org*) is an event-driven language built on Google's V8 JavaScript engine. It features non-blocking I/O to make data-intensive apps small and efficient.	Go (*golang.org*) is a safer, smaller C-style language for distributed systems. Unlike Node.js, it is strongly typed but like Node.js is not classically object-oriented.
OBJECT ORIENTATION	
Object orientation is not something that comes to Node.js natively, but you do get the prototype chain to achieve parasitic inheritance.	Like JavaScript, there is no native object orientation in Go, but structs and implementation inheritance let users achieve similar-to-prototype object orientation.
STREAMS AND CHANNELS	
Node.js's Streams vary in type (full/half duplex, and so on) for fine control of data flow to and from your code. The code needed to do this is cumbersome, though.	Go's Channels are full-duplex-only (data can flow in both directions at once), but it allows for the return of read-only channels to keep writes private to a function.
NATIVE EXTENSIBILITY	
Node.js plus C++ is seriously cool, with a wide range of uses, but the setup and build process is complicated and requires extra tooling.	Cgo (C in Go) is as good as it sounds. Write C in your go file, include the cgo library and run the `go build` command and your program is magically using C code.
PACKAGE MANAGERS	
Most of us love npm. It's canonical and namespaced, which means we can `npm install` anything. It makes every developer's life easier and safer.	Go lacks a canonical package manager. It does have a dependency manager, `go get`, which is cool, but lacks a lot of common package manager personality traits.
DEBUGGING AND PROFILING TOOLS	
Node.js lacks built-in tools to profile your code sanely. Working on billions of rows of data with a tiny memory leak? You'll end up using DTrace or a heap inspector.	Go comes with tools to read/write heat maps based on tests within your code to show the slowest functions and help debug memory leaks and bottlenecks.
CROSS-PLATFORM DEVELOPMENT	
JavaScript works just about everywhere. I've seen refrigerators running it. With no formal 'build' step, simply distribute your code and start winning.	Go is highly cross-platform on desktop and mobile, but unlike JavaScript, you have to distribute binaries, rather than code just working wherever there's an engine.

VERDICT

Both Node.js and Go are incredibly versatile languages. They're small and fast, and it's surprising how similar they are in real-life applications. While they both have their pros and cons, Go provides a strong competitor to Node.js when it comes to distributed, data-centric applications and APIs.

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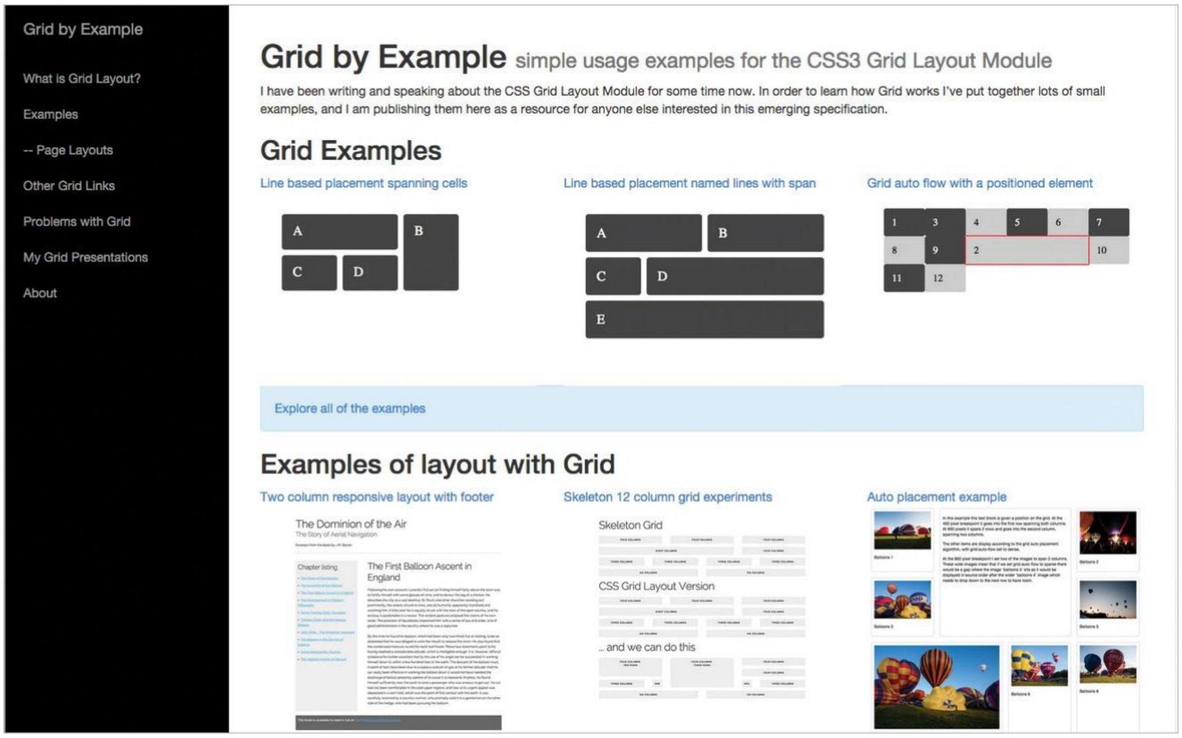
q: what's your guiltiest pleasure?

a: I don't have things I like doing that I feel guilty about – I wouldn't do them if that was the case!



✱ CSS

INTRODUCING THE CSS GRID LAYOUT SPEC

Rachel Andrew explains how the upcoming CSS Grid Layout spec will enable designers to tackle two-dimensional grids

For over half of my career on the web, frontend development involved a lot of creating images in Photoshop, then chopping them up and using markup to construct the design in a browser. Thankfully, CSS has evolved to a level at which we don't need to do much of that any more. Creating rounded corners, gradients and even animations are now possible just using CSS.

One area of CSS hasn't evolved quite so quickly: CSS for layout. We are still reliant on fragile floats, positioning and display inline-block or table, and are increasingly coping by using frameworks like Bootstrap. However, things are changing, and one of the most exciting new modules is CSS Grid Layout. In this article I'm going to introduce the module with some simple examples. It's a big and complex specification, but once broken down the individual concepts are pretty straightforward.

WHAT IS CSS GRID LAYOUT?

CSS Grid Layout is a specification for creating two-dimensional grids. It will give you the ability to set up a grid for your webpage and place elements precisely on it. The specification is currently in Working Draft status, and there is an excellent implementation behind a flag in Chrome.

Grid is a companion to the Flexible Box Module (flexbox). Flexbox is designed for one-dimensional layout, so things can be arranged in an unbroken line. Grid is designed for two-dimensional layout, meaning the items don't need to sit next to each other. In the future we're likely to use both: Grid

VIDEO

Rachel Andrew has created an exclusive screencast to go with this tutorial. Watch along at *netm.ag/gridvid-272*

Layout for main page areas, and flexbox for the smaller UI elements it excels with.

CREATING A GRID

To create a grid, we need to use the grid or inline-grid value of the display property, and then set up rows and columns. My page has a wrapper element with a class of `grid`. Inside this is a header, nav, sidebar and a footer.

```
<div class="grid">
 <header></header>
 <div class="content"></div>
 <nav></nav>
 <aside></aside>
 <footer></footer>
</div>
```

I then create a grid with CSS:

```
.grid {
 display: grid;
 grid-template-columns: repeat(5, 1fr);
 grid-template-rows: repeat(3, auto);
}
```

The spec will enable you to set up a grid for your webpage and place elements precisely on it

The grid has five equal-width columns and three auto-size rows. The rows will expand to the height of their content. The `repeat` keyword repeats the pattern after the comma the number of times stated before the comma. So our `grid-template-columns` value could also be written:

```
grid-template-columns: 1fr 1fr 1fr 1fr 1fr;
```

All the immediate child elements of `.grid` are now able to be positioned on the grid. There are two main methods of placing items – by line or template area.

Positioning by line numbers

Grids have lines that can be referred to by number or name. Our five-column grid has six lines and four rows, including the line after the final column track and final row track. To position my elements as a standard layout with a header, a main content area with a sidebar on the left and right, and a footer, I would do the following (code at *netm.ag/line-272*):

▶

IN-DEPTH

TRY OUT GRID LAYOUT FOR YOURSELF

At the time of writing Grid is available behind the Experimental Web Platform features flag in Chrome and Opera, and also prefixed in WebKit Nightlies. This implementation is usable and covers the majority of the spec. It is hoped that at some point this year Grid will be shipped in browsers that use Blink – keep an eye on *gridbyexample.com/browsers* for full and updated browser information.

Chrome and Opera

To see the examples here, or any other Grid Layout examples in action, you will need to enable the Experimental Web Platform Features flag in Chrome or Opera. Both of these browsers use the Blink rendering engine, which has the most complete and up-to-date implementation of Grid.

In Chrome, type *chrome://flags/#enable-experimental-web-platform-features* into your address bar. In Opera use *opera://flags/#enable-experimental-web-platform-features*. You can then enable that flag and restart your browser. You will be able to take a look at the examples and try out your own experiments with Grid. Blink does not require a prefix for Grid to work.

WebKit

You can try out Grid in WebKit by downloading a WebKit nightly build from *nightly.webkit.org*. You will need to use a `-webkit` prefix.

Gecko

Grid Layout is currently being implemented in Gecko. You can try it out in Firefox by typing *about:config* in your address bar and enabling the flag 'layout.css.grid.enabled'.

Internet Explorer

What about Internet Explorer? You might be interested to know that there has been an implementation of CSS Grid Layout in Internet Explorer since IE10. The specification started out in Internet Explorer, so the implementation that you will find in IE10 and IE11 is based on that very early spec. Hopefully a revision of that implementation will happen soon so we can see the latest specification in all browsers.

If you are interested in that older implementation, take a look at a piece I wrote for 24 Ways in 2012 at *netm.ag/24-272*, which includes links to IE examples.

FOCUS ON

GRID TERMINOLOGY

CSS Grid Layout introduces a whole set of new CSS properties and comes with its own terminology.

Grid Lines
In this article we look at Grid Lines – these can be horizontal or vertical, addressed by a number or name.

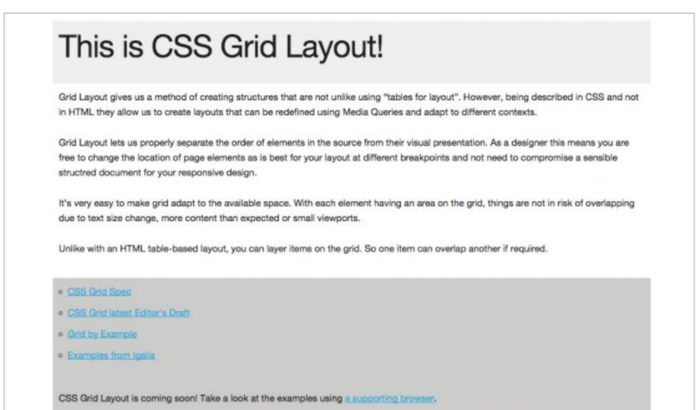
Grid Tracks
A track is any single row or column between two Grid Lines. When we place an element into a single row or column, it is going into a single track on the Grid.

Grid Cells
A Grid Cell is the smallest unit on our grid, and is surrounded by four Grid Lines. Conceptually it is just like a table cell.

Grid Areas
A Grid Area is a collection of Grid Cells. The boundaries are defined by any four Grid Lines intersecting. When we use line-based positioning we define the Grid Area by specifying start and end lines, whereas when we use Grid Template Areas we define the area by repeating the name of the area.

Those readers who were unlucky enough to have to build layouts using tables might feel Grid is somewhat similar, and in some conceptual ways it is. However, Grid has a couple of obvious advantages over tables.

Firstly, it does not tie your layout to the document structure as is very much the case in tables – there is no indication of what the layout should be in the markup. Secondly we can redefine the layout using CSS, according to any breakpoints we choose.



Starting point Our layout before creating a grid

```
header {
  grid-column: 1 / 6; grid-row: 1;
}
.content {
  grid-column: 2 / 5; grid-row: 2;
}
nav {
  grid-column: 1 / 2 ; grid-row: 2;
}
aside {
  grid-column: 5 ; grid-row: 2;
}
footer {
  grid-column: 1 / 6; grid-row: 3;
}
```

The `grid-column` property is a shorthand for `grid-column-start` and `grid-column end`. The value before the `/ is` the value for start, the value after for end. The `grid-row` property is shorthand for `grid-row-start` and `grid-row-end`.

So we specify the line on which the content starts and ends. Our header for example starts on the first line and finishes on the last line. If content only spans one track, you can omit the end value, as spanning a single track is the default.

It is worth noting that by default the columns will stretch to full height – you can see this from the grey background on the sidebars. No clearing is needed. The footer, for example, is sat in its own row. It can't jump up and cover content above, no matter which column is the longest.

Positioning by template areas

The second method of positioning items involves creating template areas and placing items onto them (*netm.ag/template-272*). If we have the same markup, we first need to assign a name to the elements we want to position using the `grid-area` property.

```
header {
  grid-area: header;
}
.content {
  grid-area: content;
}
nav {
  grid-area: nav;
}
aside {
  grid-area: sidebar;
}
footer {
  grid-area: footer;
}
```

With each area named I use the `grid-template-areas` property on the parent element – in our case `.grid`.

```
.grid {
 display: grid;
 grid-template-columns: repeat(5, 1fr);
 grid-template-rows: repeat(3, auto);
 grid-template-areas:
 "header header  header  header  header "
 "nav    content content content sidebar"
 "footer footer  footer  footer  footer";
}
```

The value of `grid-template-areas` uses the names we assigned to each element to position them. If a name is repeated, it means we want the area to span across that track. Here, our header and footer span all the columns, but the nav is in a single column to leave space for the content, which spans three.

We don't have to define the layout using classes, so we can add lots of small breakpoints

To leave a column empty, you use a full stop character (`.`). So if I wanted the footer to just sit under the content and not the sidebars, I could describe my layout as follows:

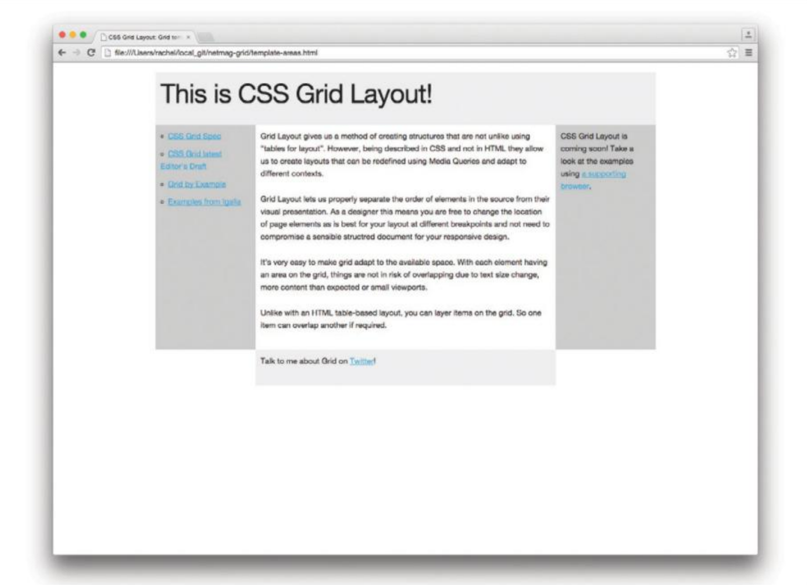
```
grid-template-areas:
 "header header header header header "
 "nav content content content sidebar"
 ". footer footer footer  . ";
```

The spec allows the use of one or more consecutive `.`s to indicate a null cell. This can help you to line up your ascii art to make it easier to read.

GRID AND RWD

CSS Grid Layout means you can redefine your grid or the position of things on it at any breakpoint. Because Grid can display things out of source order, you can order your document in the most accessible way, moving things around for each breakpoint.

With our template areas example, we might choose to only go to the three-column layout for wider screens, and a single-column layout for mobile devices. Outside of any media queries, I would name my elements as before and then lay out a single column, using Grid to place items in the order I think is best for my mobile users.



Laid out The layout after positioning the items. Here, the footer is set to only span under the content

```
.grid {
 display: grid;
 grid-template-columns: repeat(5, 1fr);
 grid-template-rows: repeat(3, auto);
 grid-template-areas:
 "header header header header header"
 "nav nav nav nav nav"
 "content content content content content"
 "sidebar sidebar sidebar sidebar sidebar"
 "footer footer footer footer footer";
}
```

Then inside media queries at my chosen breakpoint, I'd redefine that layout back to three columns.

```
@media (min-width: 550px) {
 .grid {
  grid-template-areas:
 "header header  header  header  header "
 "nav    content content content sidebar"
 "footer footer  footer  footer  footer";
 }
}
```

As we don't have to define the layout by adding classes, we can add as many small breakpoints as needed for different devices.

FUTURE TECHNOLOGY

The CSS Working Group is keen to hear feedback as it finalises the spec – you'll find the latest draft at *netm.ag/module-272*. I'm also building a collection of examples you can use as starting points for your experiments (*gridbyexample.com*). Now is a great time to be part of the exciting future of CSS layout. ■

g TALK

Rachel Andrew will be talking about the CSS Grid Layout spec at Generate London on 17 and 18 September: *generateconf.com*

★ PERFORMANCE

BATTERY API

Aurelio De Rosa discusses this new API for handling devices' battery use efficiently

Modern devices are incredibly powerful, but this power is limited by battery life. While power is mainly drained by the screen, the CPU plays an important role. As developers, we can't control all the processes running on a device, but there are still things we can do. First, we can develop apps that only execute calculations, especially heavy ones, when needed. For example, a web app could pause a long-running process if the battery level is low. Second, we can automatically perform some operations on the user's behalf: for example, save data more frequently when the battery is running low. The Battery Status API enables us to do both.

The Battery Status API (*w3.org/TR/battery-status*), also known as the Battery API, is a W3C Candidate Recommendation that provides information about the battery status of the hosting device. The API exposes the `getBattery()` method, available on the `window.navigator` object. `getBattery()` returns a Promise (*promisesaplus.com*) that passes a `BatteryManager` object containing the battery information to the callback provided for the fulfilled status. It's worth noting that the specifications prohibit browsers from rejecting the Promise. The `BatteryManager` object possesses four properties:

- `charging`: A Boolean that specifies whether the battery is charging or not. If the device doesn't have a battery or the value cannot be determined, its value is set to `true`
- `chargingTime`: An integer that specifies the seconds remaining until the battery is fully charged. If the battery is already fully charged or the device doesn't have a battery, this property is set to `0` If the device isn't charging or it's unable to determine the remaining time, the value is `Infinity`
- `dischargingTime`: An integer that specifies the seconds remaining until the battery is fully discharged. If the time cannot be determined, the device doesn't have a battery, or the battery is currently charging, the value is set to `Infinity`
- `level`: A floating number ranging from `0` (discharged) to `1` (fully charged) that specifies the level of the battery. If the level cannot be determined, the battery is fully charged, or the device doesn't have a battery, the value is set to `1`

The API also allows us to listen for four events, each of which can be mapped to a change in one of the aforementioned properties:

- `chargingchange`: The device's charger is activated or deactivated
- `chargingtimechange`: The charging time is changed
- `dischargingtimechange`: The remaining time until the battery is fully discharged is changed
- `levelchange`: The battery level is changed

As an example, the code below logs on the console whether the battery is charging or not, and the battery level every time there is a change in value:

```
navigator.getBattery().then(function(battery) {
   console.log('Charging: ' + (battery.charging ? 'yes' : 'no'));
   battery.addEventListener('levelchange', function() {
      console.log('Level (%): ' + this.level * 100);
   });
});
```

The Battery Status API is currently only supported by Chrome and Opera. Other browsers, most notably Firefox, implement older versions of the specification that expose the information via a `navigator.battery` object.

★ PROFILE

Aurelio (*aurelio.audero.it*) is a web developer with a thing for JavaScript and HTML5 APIs. His interests include web security, accessibility and performance. He's also a regular writer, speaker and book author

Download the files here!

All the files you need for this tutorial can be found at *netm.ag/regression-272*

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KEVIN LAMPING

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Job: Senior frontend engineer, InVision

areas of expertise: CSS, HTML5, JavaScript, AngularJS, accessibility

q: what's your guiltiest pleasure?
a: Playing computer games for hours after the kids go to bed, even though I should be cleaning or sleeping

TESTING

AUTOMATE VISUAL REGRESSION TESTING

It's possible to automate a test that will check your site and warn you if your UI has broken. **Kevin Lamping** shows you how to get started

One of the biggest nuisances when releasing a product or feature are regressions in your codebase. Some functionality that was working just fine two weeks ago is now broken – and it's always the client who discovers the problem. Without automated testing, you're doomed to either:

1 Spend too much time manually testing functionality for every change
2 Run a greater risk of unknowingly breaking existing functionality

Despite this knowledge, many of us don't bother writing automated regression tests, as we feel it's just too much work to set up and maintain. Luckily that's changed. We can now write fairly comprehensive tests using a technique called visual regression testing.

Regressions occur when functionality stops working as expected. Usually this happens after a code change, but it can also occur due to changes in page content or time-based conditions (e.g. daylight savings messing up alarm clocks).

We test by comparing the look of a website before and after changes (i.e. diffing). This is not test-driven development, where you write your tests and then your code – instead, you're testing against the visual output itself.

GETTING STARTED

To keep things simple, I'm testing a basic login screen. I forked a neat little Plunkr written by Jason Watmore (*netm.ag/watmore-272*). I'll be testing on a local copy, but I could easily test using the original Plunkr itself.

There are a plethora of testing tools available and each have strengths and weaknesses. For example, Wraith and BackstopJS are great for quickly testing a large swathe of pages. You simply add the URLs of the pages you want to check along with CSS selectors to focus on and run it.

This works extremely well for static sites, but won't capture the complexity of modern web apps. In those cases, you'll need to dive into test scripting. This means writing a set of actions to take – essentially, teaching the computer to browse your website. CasperJS is great for this, but doesn't allow you to test across the entire browser suite.

Visual regression testing compares the look of a website before and after changes

In order to capture the full scope of testing we're aiming for, we're going to rely on a tool the industry has been using for years: Selenium (*seleniumhq.org*).

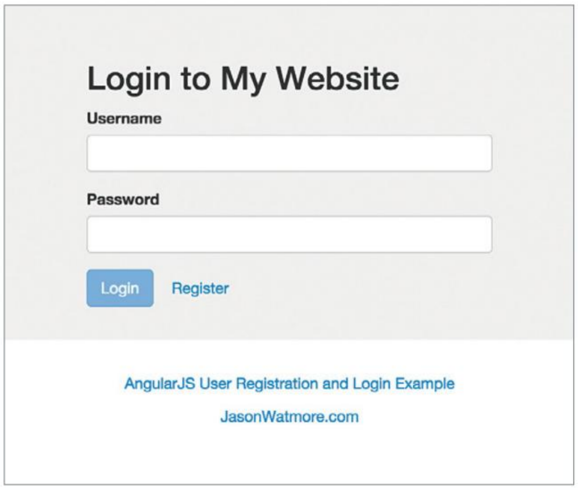
Installing Selenium

In the past, using Selenium has meant installing a Java runtime and writing a bunch of Java code for the test cases. Thankfully for frontend developers, that's changed.

Setting up Selenium locally is now simple for anyone familiar with npm. Thanks to the `selenium-standalone` module (*netm.ag/stand-272*), all I need to do is run three commands in my command line.

RESOURCE

WebdriverIO is a Selenium Binding written in Node.js. It enables anyone familiar with JS to write browser automation and add functional interaction to their tests: *webdriver.io*



Log in The entire login page. It's not necessary to capture every part of the page to have valuable tests

```
npm install -g selenium-standalone
selenium-standalone install
selenium-standalone start
```

This gives me programmatic access to the browsers installed on my computer, allowing me to use WebdriverIO (*webdriver.io*), an npm module that provides Selenium bindings for Node.js. I'll be using a related tool called WebdriverCSS (*netm.ag/drive-272*). WebdriverCSS is essentially an add-on to WebdriverIO, adding on visual regression testing.

To install both, I run `npm install webdriverio webdrivercss` from the command line of my project root folder.

WRITING MY TEST

Now I have everything installed and Selenium running, it's time to write my first test. To keep things organised, I created a 'tests' folder, and inside it a subfolder named 'visual'. This folder will house both our tests and our screenshots. I then created an empty JavaScript file named 'login.js'.

The first thing I need to do is load WebdriverIO and WebdriverCSS. This is a Node.js script, so I'll be using its built-in `require` statements:

```
var webdriverio = require('webdriverio');
var webdrivercss = require('webdrivercss');
```

Next I initialise WebdriverIO, and define which browser to test in:

```
var client = webdriverio.remote({
  desiredCapabilities: {
    browserName: 'firefox'
  }
});
```

▶

IN-DEPTH

HOW IT WORKS

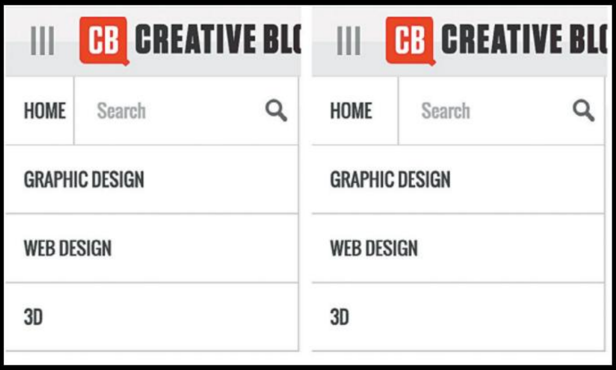
Regressions occur when functionality that was working no longer does – typically due to changes in code. We test by comparing the visual output of a website before and after changes. With visual regression testing, your test baseline is the visual output itself.

It's helpful to understand how this all works behind the scenes. There are a number of different options for tools. Using either Selenium or a 'headless browser' like PhantomJS, the script will load the requested webpages. The tool then snaps screenshots of the specific elements on the page you defined. Some tools even allow you to take certain actions on the page (e.g. mouse clicks) before and after the snapshots.

After all the screenshots are captured, it checks if there are existing images to compare against. If not, the tests are marked as complete, and you now have a set of baseline screenshots for future use.

If images already exist, the software uses an image processor (usually ImageMagick) to compare the most recent screenshots against the baseline images. This process is similar to code diffs, where the computer compares two files line by line. For our needs, it compares pixel by pixel, noting where there are differences in the values. Some software – such as Applitools Eyes – is smart enough to compare regions of pixels, ignoring acceptable shifts in content.

If differences meet a certain threshold, a third image is created, which highlights the differing pixels between the two and greys out similarities. This helps us as our visual cortex has trouble catching minor changes in spacing, colour and size.



Spot the difference Can you see the difference between the screenshots? Humans have difficulty identifying small visual changes, but computers don't

★ FOCUS ON

ADVANCED FUNCTIONALITY

One of the great benefits of using Selenium is the ability to script out behaviour. This allows you to test areas hidden behind a user action. For example, to test a drop-down menu, we'd first need to click the menu and wait for it to appear. This is done with two simple functions:

```
client
  .init()
  .click('.modal-link')
  .waitForVisible('.modal')
  .webdrivercss('modal window', [{
    name: 'title',
    elem: '.modal .title'
  }])
  .end();
```

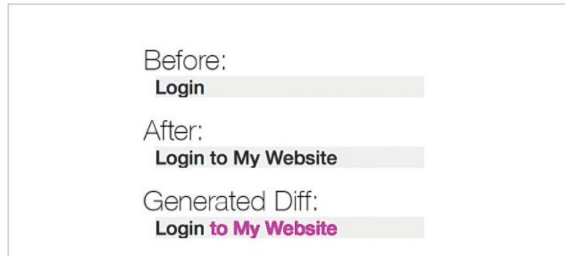
Testing multiple screen resolutions in WebdriverCSS is easy. You can pass in the resolutions globally when you first initialise WebdriverCSS, or individually per `webdrivercss` call.

```
webdrivercss.init(client, {
  screenWidth: [320,480,640,1024]
});

client
  .init()
  .webdrivercss('login form', [{
    name: 'title',
    elem: '.container h2',
    screenWidth: [1200]
  }])
  .end()
```

If `screenWidth` isn't defined in the individual test, it defaults to the global setting (if provided).

Cut back The screenshot of the login form captured by WebdriverCSS. Notice how everything outside the form element is tightly cropped out.



Highlights Pink parts in the diff image highlight the changes between the before and after shots, making them easier to see

▶ By passing in `'firefox'` as the value for the `browserName` property, I tell WebdriverIO to use my local copy of Firefox. The `desiredCapabilities` object can contain a lot more information, especially when testing on a more advanced Selenium set-up. However, for my needs, this is all that's required.

There's one more item I have to take care of before starting on my actual test case. I need to initialise WebdriverCSS and define a couple of paths for storing images.

```
webdrivercss.init(client, {
  screenshotRoot: 'tests/visual/baseline',
  failedComparisonsRoot: 'tests/visual/failures',
});
```

If you've made changes on purpose, you can update your baseline by replacing the old image

You can change the paths to match your setup, or rename `baseline` and `failures` to something different if you prefer. The main point is to keep it all inside the 'tests/visual/' folder.

Basic website connection

Now that everything is set up, it's time to write the actual tests. To do this, I first specify the website I'm testing:

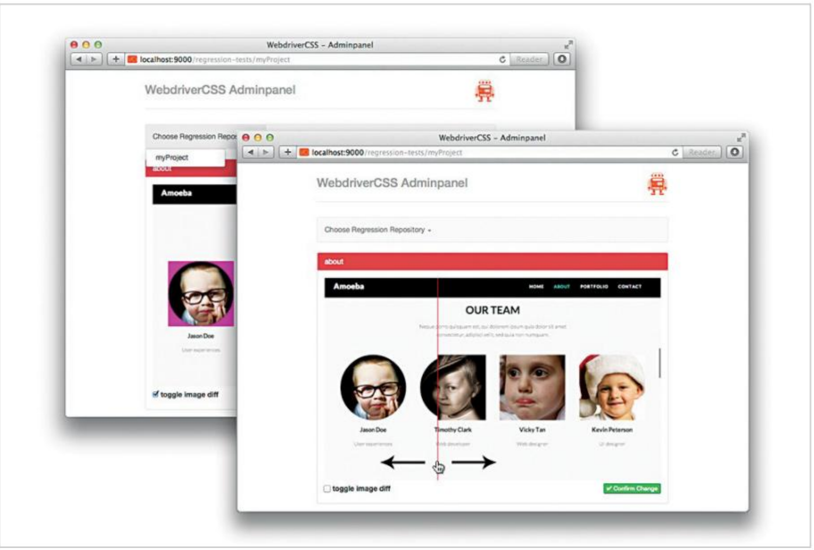
```
client
  .init()
  .url('http://localhost:3000')
  .end();
```

There's also some initialisation and cleanup code surrounding the URL definition, which indicates to WebdriverIO when it should start and stop the test.

DEFINE SCREENSHOT AREAS

Now comes the actual test. I'm going to capture two areas of the login form: the page header and the form itself. To define this, I call the `webdrivercss` function and pass in my details.

```
client
  .init()
  .url('http://localhost:3000')
  .webdrivercss('login form', [{
    name: 'title',
    elem: '.container h2'
  }, {
    name: 'form',
    elem: '.container form'
  }])
  .end();
```



Easy update The WebdriverCSS Admin Panel interface, showing the image diffs and a 'confirm changes' button, allowing easier updates for baseline images

`login form`, `title` and `form` are all human-friendly names used to generate the image filename of the screenshot. The other part is the `elem` property. This is what Selenium will use to find the element you're looking for.

While it's common to use a CSS selector for this, you also have the full suite of selector strategies available via WebdriverIO (*netm.ag/selector-272*).

Comparing changes

Now we have the test script written, it's time to try it out. I open the command line back up and execute `node tests/visual/login.js` from my project root. I wait a minute or two for it to complete the execution. During this time, a Firefox window pops up with the website being tested, and I can watch as the tests run.

After the tests have completed, I'm returned to my command prompt. Initially, it looks like nothing happened, but when I open my 'tests/visual/baseline' folder, I now have three new images in it: 'login form.form.baseline.png', 'login form.title.baseline.png' and 'login form.png'. Our main focus is the '.baseline' images. The third image is more of a reference of the overall page being tested (in case I need it for debugging).

Note: If you're running your tests on a Retina display, your screenshots will likely be off. This is a known issue with WebdriverCSS (*netm.ag/issue-272*). The best workaround is to use an external Selenium Grid provider like BrowserStack (*browserstack.com*) or Sauce Labs (*saucelabs.com*) to run your tests.

CATCHING REGRESSIONS

The baseline images don't tell me much, apart from the fact that they've captured the right area of the page. To see regressions, I have to introduce a change and run the tests again.

I'm going to change the title of my page to 'Login to My Website' and run the tests a second time. Now that I have baseline images available, WebdriverCSS is smart enough to know to compare the latest images to the baseline.

Once my test is complete, two new images are now available. The first, inside the 'baseline' folder, is named 'login form.title.regression.png' and shows the newly captured screenshot. The '.form' image remains the same, as no changes occurred between the two test runs.

The second image ('login form.title.diff.png') is in the 'failures' folder and is the diff output. This image is generated by ImageMagick and highlights the differences between the '.baseline' and '.regression' shots. This helps us quickly grasp what parts of the image have actually changed.

Accepting change

If you've made changes on purpose, you'll want to update your baseline. To do this, replace the old '.baseline' image with the new '.regression' one by deleting and renaming the files. To help with this process, the WebdriverIO folks created an Admin Panel interface (*netm.ag/admin-272*) that really improves the workflow. Check it out.

FINAL THOUGHTS

While visual regression testing is still a new discipline for frontend, usage is steadily growing. It works with the visual nature of the web to offer a relatively easy way to gather useful functional regression results. Invest the time to try it out and you'll have more confidence next time you update your codebase.

RESOURCE

One alternative to WebdriverCSS is Gemini, a project by the same company that created the BEM CSS pattern. Gemini may be easier to set up, depending on your needs: *netm.ag/gemini-27*

View source files here!

All the files you need for this tutorial can be found at *netm.ag/genesis-272*

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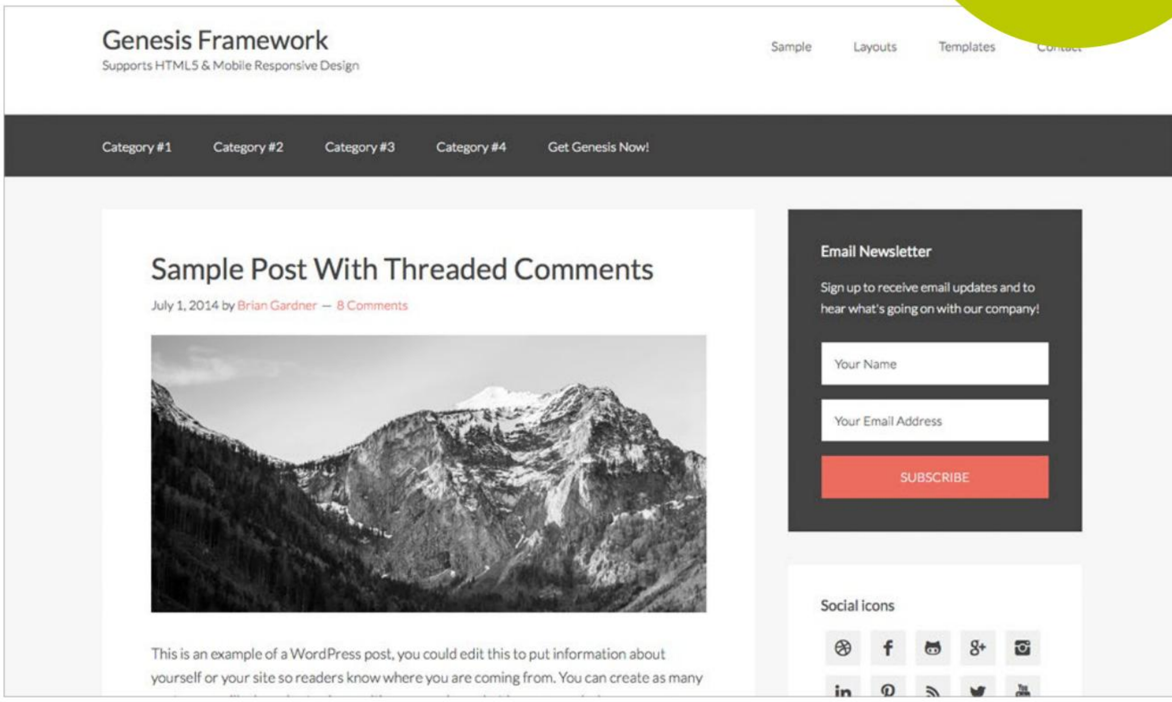
Job: WordPress developer and consultant

Areas of expertise: WordPress, Genesis Framework, PHP, CSS, HTML

q: what's your guiltiest pleasure?
a: I love salted dark chocolate-covered caramels. Pair them with a nice red wine and I'm in heaven

VIDEO

Carrie Dils has created an exclusive video to go with this tutorial. Watch along at: *netm.ag/genesisvid-272*



WORDPRESS

BUILD YOUR OWN CHILD THEME WITH GENESIS

Carrie Dils explains how you can take a child theme for WordPress' Genesis Framework and customise it – or create your own from scratch

In this tutorial, I'm going to take a look at building themes using the Genesis Framework. Let's start by taking a moment to get on the same page regarding what a WordPress theme framework is and where the Genesis Framework falls into that definition. The WordPress Codex (basically the Bible of WordPress: *codex.wordpress.org*), defines theme frameworks in three ways:

1. A drop-in code library used to facilitate the development of a theme
2. A stand-alone base/starter theme that is intended to be forked into another theme
3. A parent theme template

The Genesis Framework (*netm.ag/genesisWP-268*) falls into the third category – it is meant to serve as a parent theme. In practical terms, this means if you have a WordPress site with the Genesis Framework installed, any Genesis child theme you activate will inherit all of the functionality of the framework (in other words, the parent theme).

The benefit of this structure is that you never need to directly edit files in the framework, which leaves it safe to update. Instead, you make customisations via a child theme, which you should never update. To summarise, in the WordPress world, if you want to change the parent theme, you need to edit the child.

So, how does this structure translate to the Genesis Framework where, by default, you're already working with a child theme? Do you then change the child theme by creating and editing a grandchild? No. While technically possible, you'll be hard-pressed to find support for a grandchild theme. As an alternative solution, I recommend treating the child theme as unique and making your customisations directly.

MAKING A THEME YOUR OWN

If you're new to child theming, I recommend starting out with an existing Genesis child theme and editing it to make it your own. What does that mean? Let's take a look at a practical example.

Let's say I'm starting a new web project for a real estate company called Major Realty. There are a few existing Genesis child themes for real estate – I'll choose the Winning Agent Pro theme (*netm.ag/winningagent-272*) as a starting point. Its design is similar to the way I want my finished theme to look, so it makes sense to use it as a base.

Before I make any customisations, there are four things I need to do to make this theme unique. Let's take a look at these now.

1 Rename and move the theme folder

When you buy a theme, it's typically available for download as a zip file from StudioPress or whatever third-party vendor you purchased it from. I like to store this zip in an 'original copies' folder along with other fresh downloads.

Next, I'll unzip the theme (leaving the original zip as it is) and rename the unzipped folder to match my new theme name. In this example, I'll rename the `winning-agent-pro` folder `major-realty`. Then I'll move the theme folder over to my local WordPress install's

If you're new to child theming, start out with an existing theme and make it your own

themes folder (`wp-content/themes/`) and place the `major-realty` folder under version control.

2 Change the theme name in style.css

If I open up the `style.css` file in the `major-realty` theme folder, there's a documentation block (or 'doc block') at the top of the file that shows its key details.

```
/*
    Theme Name: Winning Agent Pro Theme
    Theme URI: http://www.winningagent.com/go/winning-agent-pro-theme/
    Description: A mobile responsive and HTML5 theme built for the Genesis Framework.
    Author: Carrie Dils
```

FOCUS ON

BLANK SLATE VS STARTER CHILD THEME

Ask 100 developers how they prefer to create a theme and you'll get 100 different answers. The benefit of starting with a blank file in a code editor is that you don't carry over unnecessary code. You only create the code you need. The benefit of starting with a starter child theme is that you can re-use code you've already written, speeding up your development cycle.

So, which is better? Well, there are 100 different answers to that too, but here's the general guidelines I recommend:

If you're new to child theming

Don't start from scratch. Find a Genesis child theme that most closely resembles the end result you want and customise it to match exactly what you need. Over time you'll develop a level of comfort working with theme files and a basic understanding of working with the unique hooks and filters in Genesis.

If you're happy modifying existing themes

Start from scratch – at least once. It doesn't have to be complex or even for a real project, but building a theme from the ground up will help cement your knowledge. As you add only the code you need to get the result you want, you'll gain a far deeper understanding of the Genesis Framework.

If you're really finding your groove

Create your own starter theme. There's no need to re-invent the wheel every time you build a new theme – as a developer, you'll have elements you always like to incorporate. By including these in your starter theme, you'll save yourself time with each new project. Also, use version control, as your starter theme will constantly evolve.

RESOURCES

RESOURCES

Before you begin your first child theme, check out the starter guide below. To help you get started, I've also listed the tools and resources I use for every child theme I build.

Articles

Building A Custom Genesis Theme (*netm.ag/gardner-272*) – Nobody knows child theming better than Brian Gardner, the creator of StudioPress and the Genesis Framework. Learn more about his process by reading this article.

Plugins

Genesis Visual Hook Guide (*netm.ag/hook-272*) – While you're getting used to the hooks and filters available in Genesis, I highly recommend using the Genesis Visual Hook Guide plugin, freely available in the WordPress plugin repository. Use it on any page of your site to see exactly which hooks and filters are in use and where they occur. I use it for just about every site build.

Query Monitor (*wordpress.org/plugins/query-monitor*) – This is another indispensable tool. Run it on any page to see which template file is in use, which WordPress conditional statements apply, every hook fired (in order), and more.

References

PHP Documentation Standards (*netm.ag/standards-272*) – Another handy resource is the PHP Documentation Standards guide, written by the core WordPress team. I refer to it frequently to make sure my code documentation is in line with what other WordPress developers are doing.

Tools

CSS Lint (*csslint.net*) – To help you write the cleanest CSS possible, use CSS Lint to check your code for errors, compatibility, performance and more. It's also available to use on command line.

Develop sites locally

If you're not developing WordPress sites locally yet, now's the time to start! Here are some resources to get you started.

How to Install WordPress Locally for PC/Windows with XAMPP
by Raelene Wilson (*netm.ag/local-272*)

Configuring a Local Apache/PHP/MySQL Dev Environment in OS X
by Brian Richards (*netm.ag/richards-272*)

Get DesktopServer and save time!
by ServerPress (*netm.ag/desktop-272*)

```
    Author URI: http://www.carriedils.com/

    Version: 1.0.0

    Tags: black, gold, red, blue, green, orange, white, one-
    column, two-columns, fixed-width, custom-menu, full-
    width-template, sticky-post, theme-options, threaded-
    comments, translation-ready
    Template: genesis
    Template Version: 2.0

    License: GPL-2.0+
    License URI: http://www.opensource.org/licenses/gpl-
    license.php
*/
```

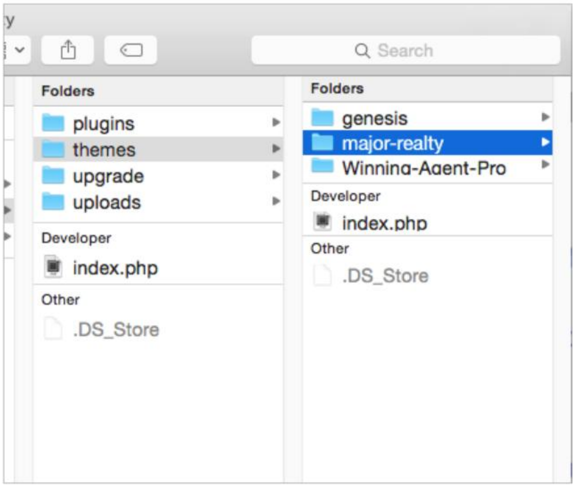
I want to change the theme name on line two from `Winning Agent Pro Theme` to `Major Realty Theme`:

```
/*
    Theme Name: Major Realty Theme
```

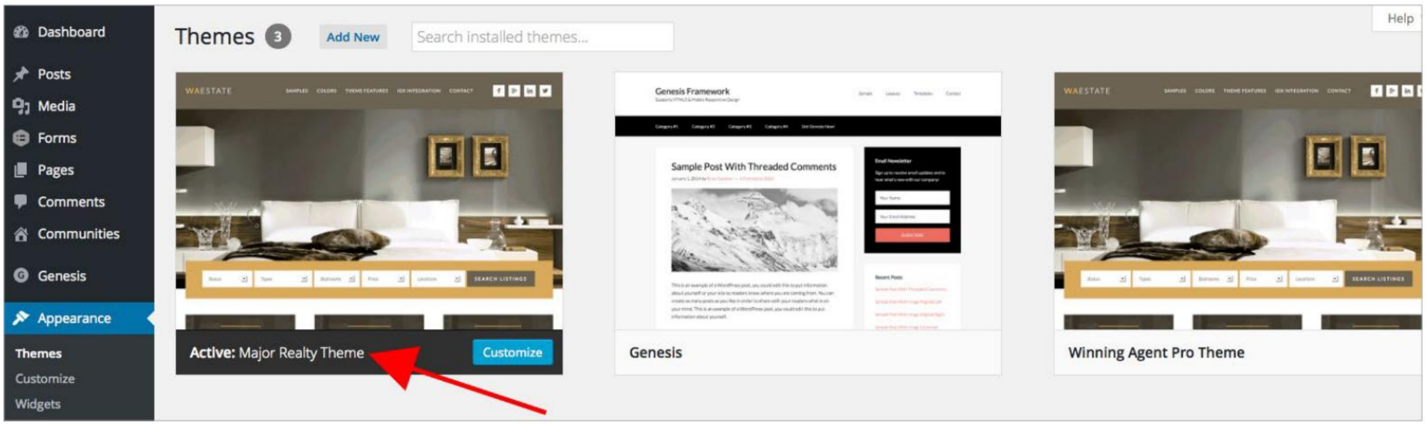
By doing this, I've indicated in the documentation that this is no longer the Winning Agent Pro

Updating style.css makes it easier to identify the new theme in the WP admin area

theme. The new name will also now appear under `Appearances > Themes` in the WordPress admin area, making the Major Realty theme easier to identify.



Change of name Renaming the folder for a customised child theme means you'll never mistakenly apply an update for the original to the new child theme



Visible name change After changing the name of a theme in `style.css`, the new name will appear in the WordPress admin area under the `Appearances > Themes` menu

3 Update the doc block in style.css

While I'm in `style.css`, I'll update some other items in the doc block. There are a couple of reasons why this is a good idea. A year from now, if I want to go back and make a change to the Major Realty theme, this documentation will help me remember certain details, such as which theme I used as a base. Also, should another developer eventually work on this theme, they will appreciate knowing these details. It's especially useful to know when a theme is based on another.

```
/*
    Theme Name: Major Realty Theme
    Theme URI: http://www.winningagent.com/go/winning-
    agent-pro-theme/
    Description: A mobile responsive and HTML5 theme built
    for the Genesis Framework. Based off the Winning Agent
    Pro Theme
    Author: Carrie Dils, Sherry Mills
    Author URI: http://www.cdils.me/

    Version: 1.0.0

    Tags: black, gold, red, blue, green, orange, white, one-
    column, two-columns, fixed-width, custom-menu, full-
    width-template, sticky-post, theme-options, threaded-
    comments, translation-ready

    Template: genesis
    Template Version: 2.0

    License: GPL-2.0+
    License URI: http://www.opensource.org/licenses/gpl-
    license.php
*/
```

In the code above, I've changed the theme name, but left the theme URI as is, pointing to the original Winning Agent Pro documentation. That documentation might come in handy at some point, so it's good to leave that reference intact. I've updated the description to indicate that Major Realty is based on the Winning Agent Pro theme.

In this case, I'm the original author (spoiler alert), but I'd recommend adding your name – either in conjunction with the original author or as a replacement – to indicate that you've done some work on the theme. It's also worth updating the Author URI to reflect your domain (again, it's very helpful to know where to find the original author if another developer ends up working on the theme). The rest I'll leave as it is.

Edit the doc block to let other developers know which theme your child theme is based on

One other important note: as the original theme is licensed under GPL, anything I make based on it (i.e. my own child theme) must keep the same licensing.

4 Change the screenshot

While not technically necessary, updating the theme's screenshot makes it easier to visually identify the theme in the WordPress admin. The screenshot doesn't need to be fancy.

The easiest method I've found for doing this is to open up the theme folder, find `screenshot.png` and then open it in an image editor. This ensures that I'm starting with the right image dimensions. For simplicity, I've given it a solid background colour, overlaid text with the theme name, and saved it back to its original location. ▶

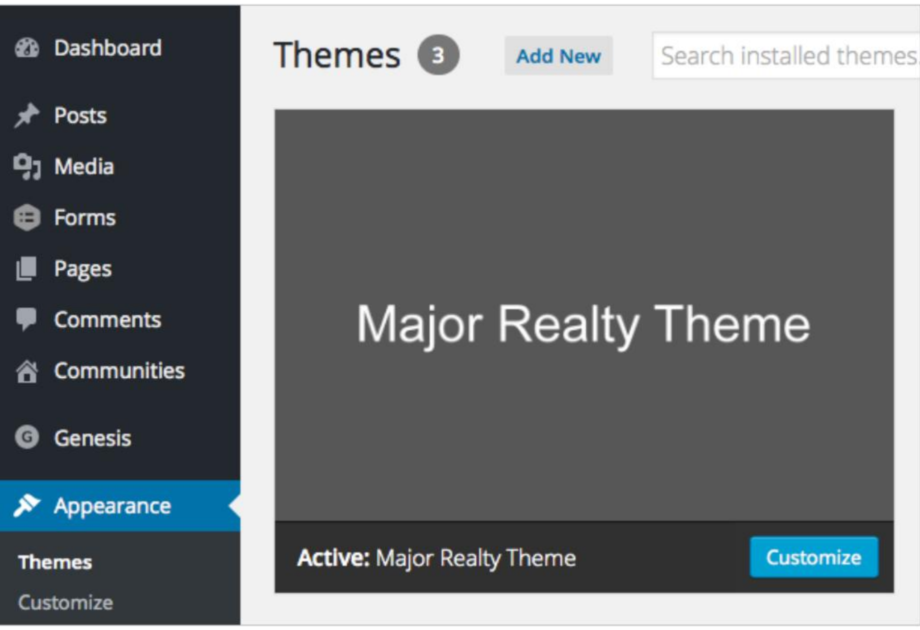


Image change Although it isn't technically necessary, changing the screenshot for your custom child theme will let you distinguish it from the original child theme at a glance in the WordPress admin area

By now, even without changing a thing about the appearance of the theme, I've made it a unique child theme. Now I'm ready to begin customisations.

USING HOOKS AND FILTERS

The Genesis Framework includes numerous action hooks and filters you can use to either modify default behaviours or add new functionality. This means that child theming with Genesis is more about utilising hooks and filters than creating templates, as you would with a more traditional WordPress theme. For example, let's say you were creating a child theme based on a theme you've downloaded from *wordpress.org*. If you wanted to change the footer, you'd create a new template file for your child theme named `footer.php`. This would override the `footer.php` file from the parent theme. Conversely, with Genesis you'd use one of the many available hooks and filters to change the footer – no new template needed.

If you've done a lot of child theming before, doing things the 'Genesis way' requires a significant mental shift. Once you get used to it, though, you'll love how easily you can make changes.

RESOURCE

It's important to know whether functionality belongs in your theme or should go in a plugin instead. This article sets out how to do so: *netm.ag/dils-272*

PRO TIPS

Here are some lessons on child theming I've learned. They should save you time and create leaner code.

Develop locally

If you're developing on a live site, you're wasting time. Skip the constant FTP-ing of files and waiting on browser reloads by running WordPress locally. To do this, you will need an Apache server running PHP and a MySQL database. You can set them up yourself or use a tool like DesktopServer (*netm.ag/desktop-272*) to do it for you.

Ditch the extra CSS

Unless you're starting with a blank `style.css` file, your stylesheet will include things you don't need. For instance, you can get rid of theme colour options, since you don't need them for a custom build. Other things you might remove are elements you know you won't use, like certain layouts or widget areas.

Keep your stylesheet tidy

Make sure the table of contents in your `style.css` file stays up to date with the items you've added or removed. Staying organised makes your life (at least the coding part of it) easier. When you add new styles, don't stick them all at the bottom of the stylesheet – add them in context. For example, if you're adding styles for a plugin, group it with the other plugin styles.

Document your code

Document every bit of code you write. If you copy and paste code from a tutorial or another site, document that too. When you're in the build process, all of your code is familiar and it's tempting to skip the documentation, but when you step away – even for a few days – you'll forget what a bit of code was for and waste your time reorienting yourself. Give your future self the gift of documented code!

Skip the constant FTP-ing of files and waiting on reloads by running WP locally

TO SUM IT ALL UP

The art of child theming really is an art. While there's certainly some science – such as writing code correctly – the process of building a child theme is a little different for everyone. When you're starting out, it's helpful to see how other developers structure their workflow when working with themes, but with each new theme you build, you'll define your own workflow and find the things that work best for you.

The most important thing to remember? Have fun coding and don't be afraid to break things! That's the best way to learn.

ACCESSIBILITY

BEYOND THE SCREEN READER

Denis Boudreau explores ways to design for an often overlooked group of visually impaired users: those with some level of vision

For most, accessibility means making content compatible with screen readers. But of the 285 million people who are estimated to be visually impaired worldwide, only 39 million are completely blind. The remaining 246 million have low vision.

People with low vision depend on browser features to resize text or zoom the page, magnification software, customised stylesheets, built-in high-contrast themes, or a combination of the above. These have very little to do with screen readers.

So how do we account for low vision users' expectations? Let's explore two basic concepts you can start implementing today.

WORD WRAPPING

User testing reveals that browser zoom makes content difficult to read for low vision users, due to content overflowing the viewport once the horizontal scrollbar forces them to pan left and right. This constant interruption in reading prevents anyone from fully engaging in content.

Word wrapping occurs when content naturally flows in a single column within the boundaries of the browser's width. This is something developers can implement by building a robust CSS structure that adapts to the width of the window, as in responsive websites. Larger type simply means fewer words per line, and a longer column of text. Win.

PROXIMITY

Lack of proximity between elements designed to work together is another problem. Users depending on screen magnification can only see a small part of the screen at once. This means they never get a full view of what is going on, and are more likely to miss important cues.

Users who have low vision deal with viewports that are much more limited. For example, a 400 per cent magnification level means users will only see about 6.25 per cent of the regular screen. In such cases, they are very likely to miss error messages or changes that occur in a sidebar. Designing content so that elements that are closely related are grouped in close proximity will always benefit users and is a great way to prevent them from missing out on what is happening. Another win.

So forget about that screen reader and approach accessibility in a more holistic way. Given the overwhelming number of people who will benefit directly, it would be crazy not to!

Read the extended version at netm.ag/reader-272

PROFILE

Denis (@dboudreau) is a senior web accessibility consultant and strategist working for Simply Accessible (*simplyaccessible.com*). He has been advocating social inclusion on the web since 2001

net
Where ideas take shape.
Bring your projects to life with Shutterstock's diverse library of over 50 million images, videos, and audio tracks. Flexible monthly payment options, innovative search tools, and no daily download limits make creating even easier.
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