

A FULLY RESPONSIVE WEBSITE USING ONLY CSS3 & HTML5

A research by design of a website by

FELIX KING

INTRODUCTION

The world of media is changing fast. Home computers and the internet on them have been proclaimed to be the lead media of tomorrow, but with the success of smartphones and tablet computers, the expectations shifted. These new devices have different strengths and needs and they do some limitations.

I am going to design and produce a website that is matching these special needs and those of the internet of tomorrow. I am going to explore limits the and suggest ways around it. To ensure a professional real live approach, I am not going to do a fictional website but a professional portfolio website for myself.

STARTING CONDITIONS

I have a background in the advertising industry – mainly print related. I worked as a project manager and advertising consultant in the last years. I have never coded a website before, but consider myself to be a digital native. Every now and then I was the responsible project lead for small web projects. I was responsible for the coordination of all parties involved and had to ensure, that all requirements and deadlines are met. Now I have to be the designer, the coder, the project manger and the client myself, which allows me to understand those parties better in the future.

I know what is possible if you work with a team of experienced developers and designers and have a clear idea what the site should look like and what functionality and user experience I want to achieve. So my expectations are higher than those of an usual beginner. My mission is obvious: From zero to hero in web design in 4 months.

LEARNING RESOURCES

The seminars provide a good overview over the fundamentals. But to dig deeper into special technologies, a lot of reading and research is necessary. I learned HTML5 with “Introducing HTML5” (Lawson & Sharp, 2011), “HTML5 and CSS3: Develop with Tomorrow's Standards Today” (Hogan, 2011) and multiple web resources:

- csstricks.com (Coyier, 2011)
- netTuts+ (Way, Burgess, McPeak, Harper, & Siddharth, 2011)
- webdesignTuts+ (Yates, 2011)
- HTML5ROCKS (Google, 2011)
- W3C HTML5 Specification (W3C, 2011a)

TOOLS

Tools I used are Adobe Photoshop for the layout, a Text editor for the code and ca-coo for the wire-frame. I did not use any WYSIWYG-tools for the code to gain a real understanding for the technologies.

BRIEF

The task is to design & produce a website with the theme 'The Life and Times of Felix King'. I am not going to show my private life but professional life. This contains my CV, my works and my skills for the part 'up to the present' on which I set the focus and a contact form and one page for the part 'future'. I am not going to describe my future, since it is a professional website, but I will meet the requirements for 'the present onwards' with an outlook on how hiring me would effect possible clients. Here I will also meet the requirement of being creative, since the past is based on facts. I will also show creativity in places where it is not very obvious: in the actual production, techniques and technologies used.

GOAL

The communicative goal of the website is to acquire new customers for freelance work or getting job offers. I am keeping it simple and straight: You are looking for media excellence and I am willing to provide manpower. The law of supply and demand. I'm using the basic advertising principle of AIDA (Russell, 1903) to achieve this:

Attention: Catchy homepage with highlights of my work

Interest: Showing off a wide range of skills

Desire: Awesome projects of different fields that build up trust. Possible clients can find application for their own products or projects.

Action: Contact form

The final step is the most important step and unfortunately the one with the highest bounce rate. The reason is obvious: in all previous steps I am serving the visitor, but in this last step I want something from the visitor. I want his trust, his time and his money. So the "call to action" has to be clear, and the action has to be non-binding and free of barriers.

To achieve this I have a contact form on the homepage and directly below all portfolio items. This way there is no need for additional clicks. Possible future clients can answer the call to action directly at the point of desire.

TARGET GROUP

Main target group of my website are decision makers in the media industry, entrepreneurs and marketing and advertising departments. Or to keep it short: possible

clients. Another target group are collaborative people, who work in the creative industries.

These target groups have access to state-of-the-art computers & mobile devices and a high aesthetic standard. There is no need to optimise the site for low-end devices, small bandwidths or old browsers.

MAIN ANALYSIS

LEITMOTIF

The Leitmotif is “fun”. I do all my works with an enormous amount of passion, because my profession is my calling and you are best in the things you love. I am infecting prospect clients with my passion and showing off the fun projects I did in the past and inviting them to do some fun projects with me in the future.

LOOK & FEEL

All my works have their distinct look & feel. All companies have their corporate design guidelines which have to be followed. To enable viewers to focus on the works I did, the design of the website has to be consistent and discreet.

Usually it is best practise to design with lots of white space to make the works stand out and sink in, but since mobile devices are limited in display space, the works are made stand out in a different way: with a very clear and strict design pattern. Every design element has to serve a purpose. Form follows function. There is no decorative design at all.

To prevent the site from looking sterile background textures are used in a very subtle way.

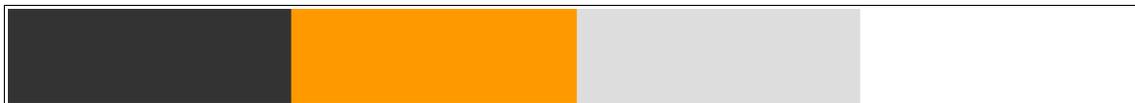
Colour Scheme

charcoal
#333

orange
#F90

light grey
#DDD

white
#FFF



Orange is the only chromatic colour which is used all-over. It is a colour that none of my clients uses and so it stands out. The colours scheme grants maximum contrast and readability, so the navigation will be clear throughout.

TECHNOLOGIES AND LANGUAGES

Following the trends of 2012 (Grannell, 2012) I focused on HTML5, CSS3 and responsive design.

The Markup

I used HTML5 as the markup language. It is still in development but it is going to be the standard of the future. The W3C has made its “last call” in may 2011 (W3C, 2011b) which can be compared with the state of a release candidate. It is feature complete and ready to use (W3C, 2011c).

HTML5 has four design principles (Kesteren & Stachowiak, 2007):

Compatibility

Existing content will be supported and older browsers can display the content of HTML5 to a certain extend, too. It is an evolution rather than a revolution.

Utility

New features have been added on a problem solving basis and have to be consistent. First the problems of users then authors then developers should be solved. Security is implemented as a part of the specification.

Interoperability

Behaviours and error handlers should be designed clearly, complexity should be reduced to a minimum, to ensure that the markup works on different user agents.

Universal access

Documents should be as media independent as possible and world-wide supported through the use of Unicode. Content should be highly accessible for all devices and disabled users.

Styling

For styling I use CSS3. It is important to divide content and presentation for the following reasons:

Cleanliness

The markup stays clean and easy to read.

Cross platform compatibility

Different presentations for different devices is possible. The content can be optimised for for the capabilities of different devices.

Consistency

The look and feel stays consistent over all pages of a website.

Workflow optimisation

Changes of the design are implemented fast & effectively. To change the fonts of all pages you just need to change a single line of code.

Bandwidth

Since the presentation definition is in one central stylesheet, the design has not to be defined over and over again. The markup files are smaller and the CSS files are cached locally.

Why CSS3?

CSS3 is the latest instalment and offers lots of improvements.

Media queries

Media queries enables the presentation to be responsive. You can not only design specifically for different devices, but even for dynamically changing screen resolutions.

Animations

Animations can be implemented without the the use of plug-ins. This is essential for the development for mobile devices since iOS devices do not support flash and Adobe has dropped the development of Flash Mobile (Arthur, 2011).

Bandwidth & work-flow

Since CSS2.1 many styling methods have been added like shadows & rounded corners. Those elements can now be rendered on the fly and do not have to be rendered out into pixel based images in Photoshop, Gimp or Fireworks. The CSS styles are more flexible, because they are scalable and easily apply to different sized elements, furthermore they reduce the amount of server requests and consume less bandwidth.

Animation

The website only uses CSS and HTML5 for animation. The site has to run on iOS devices, so flash is not used. Since the goal was to explore the possibilities of HTML5 & CSS3 Javascript will also be set aside.

Rich content such as audio or video are implemented using HTML5, animation like slide-shows will be implemented using CSS3 transitions.

STRUCTURE

The structure of the site is clear and uncreative in a very positive sense: It uses a navigation pattern and site structure, that is known to possible clients: A portfolio style website with the usual pages. The visitor does not have to understand fancy new ways of navigation. This diminishes the distance between me and the visitor and accelerates the navigation. The target group as a very limited amount of time. If the portfolio is not concise, there is no opportunity to satisfy them.

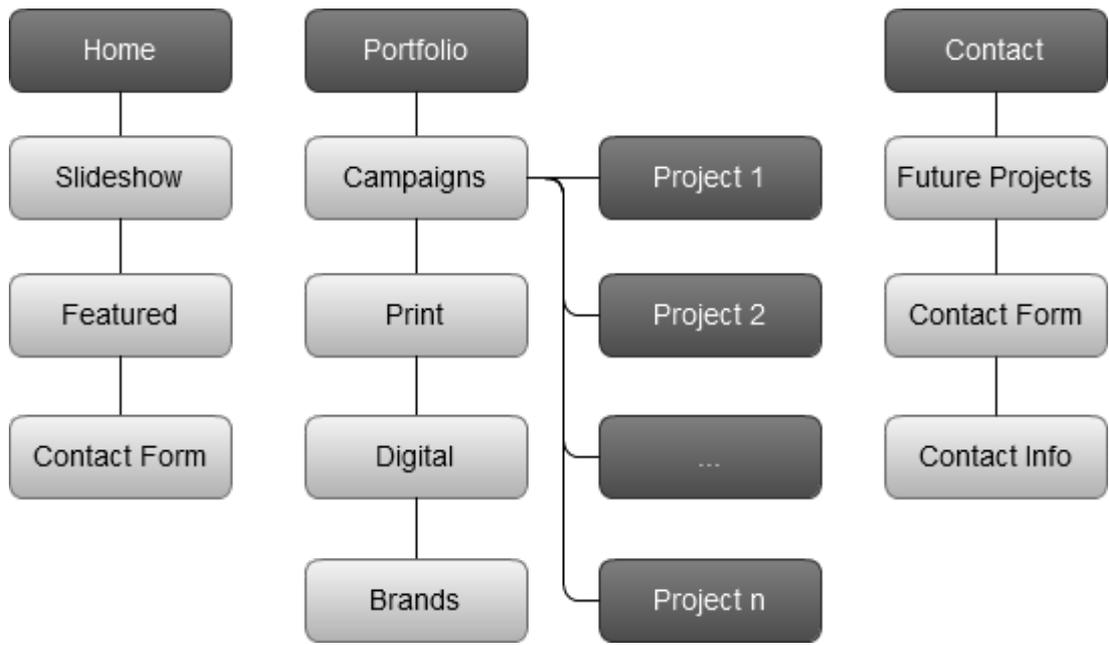


Fig. 1: Sitemap

THE WIRE-FRAME



Fig. 2: Wireframe of home, portfolio and details page

To focus on the structural layout of the website, all elements have been laid out in a wire-frame. This way you can ensure to not be distracted by details or the content.

THE LAYOUT



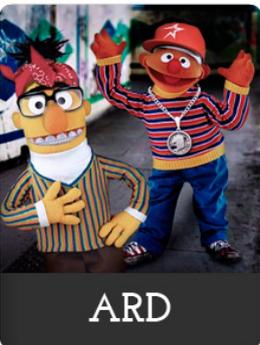
- HOME
- PORTFOLIO
- ABOUT
- CONTACT



I DO THE FUN STUFF

3D, ADVERTISING, MOTION GRAPHICS, LOGOS, CORPORATE DESIGN, SOCIAL MEDIA, COMPUTER GAMES, CAMPAIGNS, ONLINE, COOKING, VIDEO, MATERIALIZING YOUR IDEAS.

NOTHING MORE, NOTHING LESS



Got me! I've got this exciting project you'll really like ...

Name

E-Mail

[Make it happen!](#)

MORE FUN STUFF:

Fig. 3: Basic Layout

The homepage was designed in Photoshop with the wireframe as a blueprint. As stated above the layout was kept simple and clean. Everything styling related except the background is done in CSS without images. The social media icons including the hover states are one single sprite to reduce server requests.

TONALITY

The tonality of the website and the tone of voice is adjusted to this target group: It is non-compliant, offensive yet original and authentic. The site stands out of the mass and the brand 'FxxKing' (an apronym made up of my first name and my surname) is burnt into ones mind immediately. Everything is straight forward, nothing baroque.

FEATURES

Responsiveness

The website is fully responsive. The content and elements of the website reflow when resizing the browser window. The navigation transforms on small devices to work with touch inputs and font sizes adjust accordingly.

Pictures respond in two different ways to the resizing. The slide-show and the images in the portfolio overview are clipped off on the right side. Before they become to small the number of columns is reduced. The images on the project details page resize in both dimension and reflow to prevent them from becoming too small.

Slide-show

To realize a CSS only slider I started with the well documented “The pure CSS Slider” (Jacob, 2011) and modified the code to my needs. The styles needed to be changed according to my design and the slider had to be modified to be responding to the viewport width.

This works nicely, but is not comparable to a flash or Javascript slider. The most severe problem is that it is very inflexible. The animation works with CSS transition and there are no variables or computed values accessible. So every number has to be hard coded into the styles. As soon as the number of images or their dimensions change, the whole code (about 300 lines) has to be adjusted by hand. If you have multiple slide-shows with different attributes you need to have multiple CSS files. Another problem with those CSS transitions is, that they are computationally more intensive than Javascript especially on mobile devices, what causes occasional hiccups.

For most cases jQuery sliders are more recommendable.

Lightbox

The lightbox is much more ready for a productive use. There is also the limitation that values can not be computed automatically within CSS but with a clean workflow you can render images in standardized dimensions and assign different classes to different image dimensions so they align properly.

The code is very straight forward. If the the lightbox is inactive, the element is positioned off-screen and is moved into the focus with the “target” pseudo-class. This works with hashtags in the url and even allows deep linking directly to those lightboxes.

The only drawback besides backwards compatibility is that the elements are not loaded dynamically. Especially lightboxes with lots of content will increase the load of the page. Because of this and because of the fact that it is hardly manageable without Javascript and/or PHP to code the over 100 divs for all portfolio images by hand, I only implemented one or two zoomable images per portfolio item.

Accordion

The accordion on the portfolio page also works with transitions: the div toggles from “height:0” to height:auto”. But there is a flaw in CSS3 or the implementation in all browsers: when you animate height from or to an “auto” value, the animation drops. But there is a work-around: Since you can not animate the height, you have to set the max height to a ridiculously high number (to make sure it is flexible and also works on devices with a small resolution, when the reflow makes the site much higher) and animate the max-height instead. Here I propose the CSS3 specifications should be revised.

Contact form

Since the project has to be handed in on CD/DVD, server-side scripts do not work. So the HTML5-form does not work in this environment. On a server they have to be implemented with with the “post” function in PHP or other server-side languages.

IN CONCLUSION

All in all the plan to develop a fully responsive website just with HTML5 and CSS worked out really well. It imparted a basic understanding of those technologies, but this needed an enormous amount of work and trial and error.

The website works with all major up-to-date mobile and desktop browsers.

I would not have done anything different, because it was this process, that made me learn a lot. But future projects I would do differently. I would use Javascript for animations because it is much more flexible. I would use Javascript as well for dynamic loading of content to reduce the load of the accordion and the lightbox. Ajax is important for slower connections – for example on mobile devices. And to really use the new functions of HTML5, like canvas, you need to use Javascript.

I would also use PHP-includes to be flexible and consistent with reoccurring elements like the header and the footer. Furthermore I would use a content management system to save many days of repetitive work for resizing images and coding all portfolio pages by hand.

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