



Responsive Design Guide

A Human Response to Modern Technology

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Responsive Design Guide

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Overview

Responsive design is a human response to modern technology.

The term “responsive” in this sense was first used in the fusion of art and architecture, referring to spaces that are influenced by its occupants and the ways they interact with it. An unused room might shrink to accommodate the overflowing room next door. Similarly, a responsively designed website adapts itself to the needs of the reader.

The tools which enable responsive design have been in motion for the last decade. In April of 2001, the first W3C proposal for media queries was published. Cameron Adams built a proof of concept for responsive design in 2004 simply to improve the readability of websites in standard browsers. Browsers began supporting media queries in 2009 and are now installed on all modern smartphones and tablets.

The recent increase in smartphone and tablet penetration raises the importance of responsive design. It is estimated that 40% of all mobile devices in the US are now smartphones and the global audience is even larger. It is increasingly likely that a customer will consume a website via a screen other than the desktop the site was built and tested on, and there is a good chance that their experience will be comprised if the site was not designed with a responsive approach in mind.

Defining Responsive Design

Simply stated, responsively designed pages display content optimized to the aspect ratio of the browser window. Narrow windows might display a single column, suitable for a smartphone; wider windows would display full-sized images and multiple columns, providing the rich experience one expects on a desktop browser.

A responsively designed website will read well on many devices. By embracing the web as a medium distinct from print a single responsive website unifies good and engineering and good graphic design. This approach has become increasingly important in the current technical climate, with users accessing web properties on desktops, smartphones, tablets in a variety of orientations, and increasingly on TV displays.

The Benefits of Responsive Design

What are the benefits to a responsive approach to building web interfaces? Why should an organization go through the extra effort?

The main benefit is that a responsively designed site will provide the best, most consistent experience of a web property for its user base. Anyone who has tried to use an unoptimized desktop-formatted site on an iPhone or Android phone has experienced the frustration of scrolling and zooming to find what they need. With the ever-increasing number of devices and platforms and the attendant number of potential site-viewing combinations, building responsive standards-based sites has become critical to maintaining flexibility and user experience.

Another important benefit is that a responsive approach relieves the enterprise of the need to create multiple mobile versions of their web site, saving development time and budget for more important activities. In some cases a responsively designed site can even alleviate the need to create and deploy a native application.



An Approach to Implementing Responsive Design

The benefits of responsive design seem clear, a better user experience and more efficient use of development resources. Implementing responsive design also require some changes to the traditional approach to site/app development.

Ideally the responsive design process starts from the small screen and works out to the big screen, and in some “green field” projects one may have the luxury or working this way. In practice, though, this approach is not practical.

The Challenge of Managing Mobile Expectations Based on the Desktop Experience

A significant challenge is often posed by the expectations and thought habits of stakeholders who are used to thinking of the web through the lens of their desktop experience. They may not be comfortable providing feedback on the mobile view as their first experience with a new design.

As consultants, our clients’ input into the user experience and design is critical to the success of the venture, so it is important that they feel comfortable with the process. Therefore leading with the desktop design is usually more effective than putting the mobile experience first. However better results can be achieved by creating a mobile layout in parallel to the desktop layout and present them together. Designing the mobile view as early in the process as possible will help avoid potential implementation gotchas.

Incorporating Legacy Designs, Apps and Assets into the Mobile Experience

Very few organizations are building their mobile presence in a vacuum; they must take into account the legacy of prior efforts. This doesn’t mean just legacy systems, but rather adapting existing designs and apps to a mobile paradigm after being designed and deployed for the desktop.



First consider how to adapt existing designs to meet mobile users priorities and assumptions. For each page on the current site, identify the small screen use case that best characterizes the page. This will serve as the central experience when viewing the page on a mobile device.

Next itemize the other elements of the page, including navigation, branding, and disclaimers. These elements are candidates for reduction in the mobile experience, by shrinking their size or replacing them with links to other pages. Although elements can be removed in mobile views, Cantina advises caution. Users coming from the full site experience may expect the presence of these elements, leaving them without a means to achieve their goals.

Finally take stock of the mechanisms by which users traverse the site. Avoid the widgets that are frustrating to use without a mouse as some of these widgets will not work on mobile devices and in most cases can be re-platformed using HTML5 for better cross-device support. Of course the functional requirements of the widget or application may preclude the ability to make it truly “responsive.”

The Process of Delivering a Responsive Design

The Responsive Design approach will impact the development process, potentially across every phase, depending on the scope a project.

The Requirements Phase is Expanded to Include Mobile Parameters

When defining business, functional and technical requirements it is important to consider the responsive, multi-device perspective from the beginning. There has been a shift in the way project requirements are captured and documented in light of responsive design techniques.

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Additional Key Considerations

Device/platform/browser support: Prior to mobile, documenting supported browsers was the best practice. Now the platform and type (or level) of the device needs to be included as part of the support structure.

Mobile priorities: Prioritizing requirements is another standard best documentation practice. In responsive design it's important to also track mobile presentation priorities, at least at a broad functional level (i.e., search access is a high priority throughout the various responsive permutations)

Mobile user stories: Organizations which leverage user stories as the main requirements approach should also create specific stories for the mobile user. It may even be necessary to create stories for specific device users (smart-phones vs tablets) although this may prove to be overkill.

Revisit responsive approach: Having gone through the mobile project requirements in detail, is a responsive approach still the best path? Or do the requirements point to the need for a separate mobile site or native app due to the level of interactivity and the user activities required to meet the requirements?

A User-Centric Focus Will Meet Customer Needs

When designing a responsively designed website Cantina recommends a user-centric information architecture approach.

Non-Responsive Design Displays Same Un-optimized Content to all Platforms

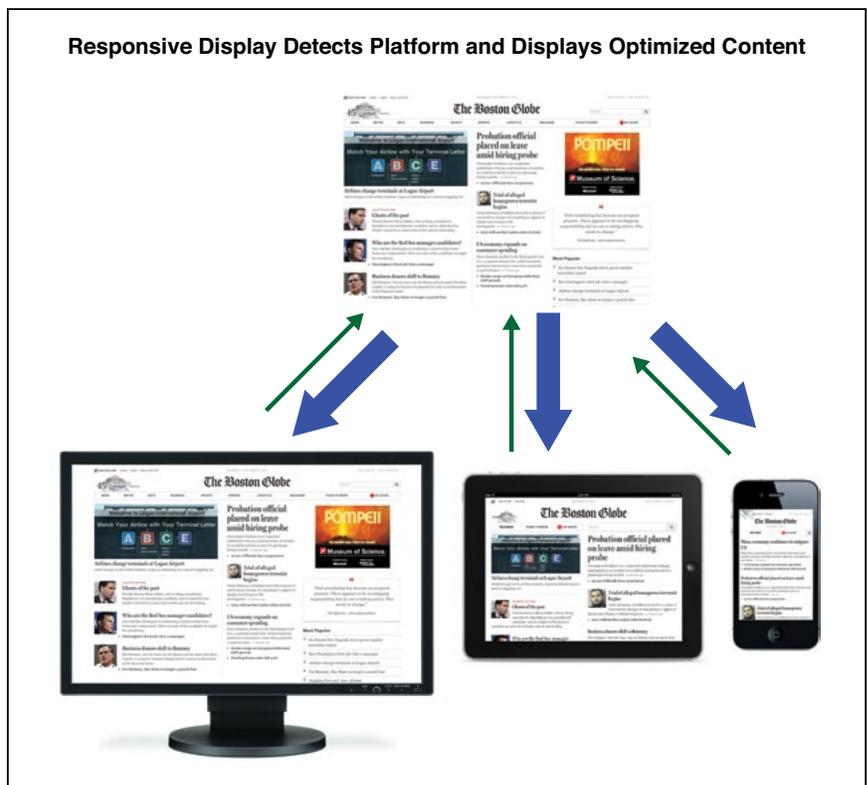


The typical tasks that mobile users execute tend to be more narrow and more focused than what happens on the desktop. The small screen reduces context, making exploration or open-ended creation tasks more difficult. Primary mobile tasks are simple fact-based research, short-form communication, and the browsing and consumption of curated content. It is essential to keep this in mind when beginning the design-related activities of the responsive development process.

Start by creating or using organization-specific user personas, the archetypes of the users of the site. If an organization already utilizes personas to define functionality or design layouts it may be necessary to augment those profiles with specifics about mobile usage and needs, or to create new separate personas.

Next, identify the goals these users will have when they use the site, for each different use case of the site. Capture these goals with agile-style user stories by including the user role and the user's desired outcome when describing the features the site should support.

Finally, compile a sitemap by grouping and prioritizing the user stories. Stay mindful of mobile devices' strengths and weaknesses. Be especially mindful of the top-level content categories since this will be the primary navigation for mobile users. Try to keep the number of top-level categories below eight. The end result should be a clean, small site map, where the most frequently requested information is readily accessible and logically categorized.



The Logistics of the Responsive Design Process

Wireframing: Wireframing is the first step in the site design process, unfortunately, this is the step that benefits the least from the responsive design approach. It is still important to design wireframes for every delivery platform the site is required to support. Fluid grids may bridge the gap between similar layouts, such as portrait and landscape tablet. One of the CSS Grid systems providing basic fluid grids may be useful here, for example, the 1140 CSS Grid system provides a basic 12 column layout. Development time can be saved if the site wireframes can be expressed using this grid system.

Graphic Design: With dynamic layouts, there is a greater importance on traditional branding elements of graphic design. A coherent use of color schemes and typography along with a recognizable logo at all resolutions will help tie together the customer experience regardless of the delivery platform. Also consider typographical principles such as optimal reading line lengths.

User Experience Testing: Responsive design can have a big impact on user testing, depending on approach. No matter what type of usability testing is used it is recommended that some portion of the time is dedicated to the “small-screen” experience. If there are functioning responsive prototypes simply scaling down to the appropriate size may be sufficient to evaluate the user’s mobile experience. It is particularly important to test the navigation at the smaller screen size, as well as the presentation of core functionality. For instance there might be a problem “hiding” a form input field behind a link when scaling from the largest to the smallest size. Functions that rely on information retrieval need to be tested within the mobile experience as these sorts of tasks may vary from layout to layout

Content Design and Development: Traditionally content development may not have started until the site was built, and been a part of the final validation and testing phases of the project. When developing responsively understanding the content becomes more important than ever. The difference between the desktop and smartphone is screen size and real estate. Add in navigation and graphics and the space available for the presentation of

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content becomes even smaller. Cantina recommends devising the content strategy early on, and creating the content as early as possible as well. Prioritizing what needs to be presented to the user in the mobile realm will help avoid overly long content pages or the need to break a piece of content into multiple pages, which all but guarantee longer download times and potential user attrition due to impatience.

The Highlighted Takeaways

Given what has been described a responsively designed web site or app will probably require more time and resources than a traditional development process, at least initially. Cantina believes that for most organizations the extra investment will yield improved results and long-term savings and that the benefits will outweigh any negative impacts.

Benefit: Better Managed Mobile Presence

With the deep and expanding penetration of mobile devices every organization's web presence is being consumed on multiple mobile platforms and devices. Every organization needs to respond to this new environment, and it is far more efficient in the long run to build one code base to serve multiple devices than to build separate stand-alone sites each with a different interface and code base. The ever-changing mobile landscape will require ongoing

| Feature | Avoid for Now | Use with Caution | Use it Today |
|---------------------------|---------------|------------------|--------------|
| HTML5 Audio | | | X |
| HTML5 Video | | X | |
| Web Storage | | | X |
| Web SQL DB | X | | |
| Indexed DB | | X | |
| Data URLs | | X | |
| HTML5 Data Attributes | | | X |
| Geolocation | | X | |
| Web Workers | | X | |
| Web Sockets | X | | |
| Servers-Sent Events | | X | |
| Canvas (2D) | | | X |
| Canvas (3D/WebGL) | X | | |
| SVG | | | X |
| SVG Filters | X | | |
| CSS3 Animations | | X | |
| CSS3 Multiple Backgrounds | | | X |
| CSS3 Transitions | | X | |

ing reviewing and re-testing against new devices and platform permutations.

Impact: A Shift in Approach to the Development Process

While at first blush it may seem that responsive design makes site and app development larger and more complex by adding new platforms and viewports to the mix, in reality most organizations are already involved in app and mobile development. Responsive design principles can help standardize and regularize what is becoming for many businesses a chaotic approach to mobile implementation. An explicit focus on the mobile experience should allow for better allocation of resources and priorities to better suit the needs of users, perhaps even de-emphasizing the desktop experience that has dominated development for the better part of fifteen years.

Benefit: Better User Experience

Most importantly this approach should bring about a better overall experience for the user base, as their key mobile tasks are driven by an explicit design process that allows for the necessary decisions to be made at the right time and not as an after thought.

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About Cantina

Cantina is an emerging technology consultancy that combines business acumen with hands-on know-how to craft the right solution for our client's business problem, using the best available technologies. Cantina's clients include Fortune 1000 firms in industries including financial services, consumer products, media and professional services. Core capabilities include strategic technology consulting and app development on all platforms. Strategic and service capabilities include mobile strategy and development, video, social, user experience, emerging technologies consulting and technology auditing. Core technologies and platforms include HTML5, iOS, Android, Brightcove, Ruby on Rails, Grails, Java, J2EE, .NET, and PHP, Flash, Flex, Adobe AIR, and AJAX.

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