Responsive Web Design with Drupal

A guide to the responsive web ideology

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Do you remember when websites looked like this?
(chances are, it has been a while!)

But the reality is, these websites still exist all over the Internet. *HTTP Archive* reports that the average time until a mobile webpage becomes interactive (or usable) is **9.3 seconds**. This, at a time when Google's metrics show that as a website's load time increases from 1 second to 10 seconds, there is a **123% higher probability** of a visitor 'bouncing' (jargon for moving off the webpage).

Clearly, at least 50% of the Internet today still carries a strong risk of large numbers of visitors bouncing off the website. Users prefer to go through a clean, well designed website.

According to Adobe, 38% of users will stop interacting with a website if it is unattractive.

Why Responsive Web Design?

1 — Fewer lost visitors, more purchases.

2 — Visitors stay on the website longer.

3 — Better brand image and reputation.

4 — Access to a much larger audience.

Key Business Benefits!

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What is Responsive Web Design (RWD)?

SmashingMagazine defines RWD as -

"The practice consists of a mix of flexible grids and layouts, images and intelligent use of CSS media queries. As the user switches from their laptop to iPad, the website should automatically switch to accommodate for resolution, image size and scripting abilities.
One may also have to consider the settings on their devices; if they have a VPN for iOS on their iPad, for example, the website should not block the user's access to the page.
In other words, the website should have the technology to automatically respond to the user's preferences."

The History of the Responsive Web

Responsive web design has evolved from the explosion of multi-format devices that are used to access the Internet today. In the early 2000s, it was fine for a website to have a desktop format, while users were expected to navigate the same format on mobile screens as best as they could.

This resulted in viewing experiences much like the image alongside.

Web designers and developers started looking at methods to solve this problem, and the led to the development of a few solutions.

Separate URLs

The first change that web designers brought about was the utilization of separate URLs for mobile and desktop formats. While this made it possible to provide a more user-friendly experience, it has several drawbacks –

1. It necessitated the creation and maintenance of two separate websites
2. The website address was different for both sites
3. It did not work for all resolutions – a separate site is needed for each resolution/form factor (mobile, 6 inch smartphone, 4 inch smartphone, tablet, 11 inch laptop, 14 inch laptop etc.)

Adaptive Design

Adaptive design was the first single-site, multi-format solution available for web development. Adaptive design made it possible for design elements for different formats to be made part of the same page, and based on the device being used to access the site, served content appropriate to that device.

Adaptive design also has a flaw, however. It required the use of alternate content and additional HTML to define the content to be used for different formats, resulting in extremely long HTML pages and a lot of HTML code.
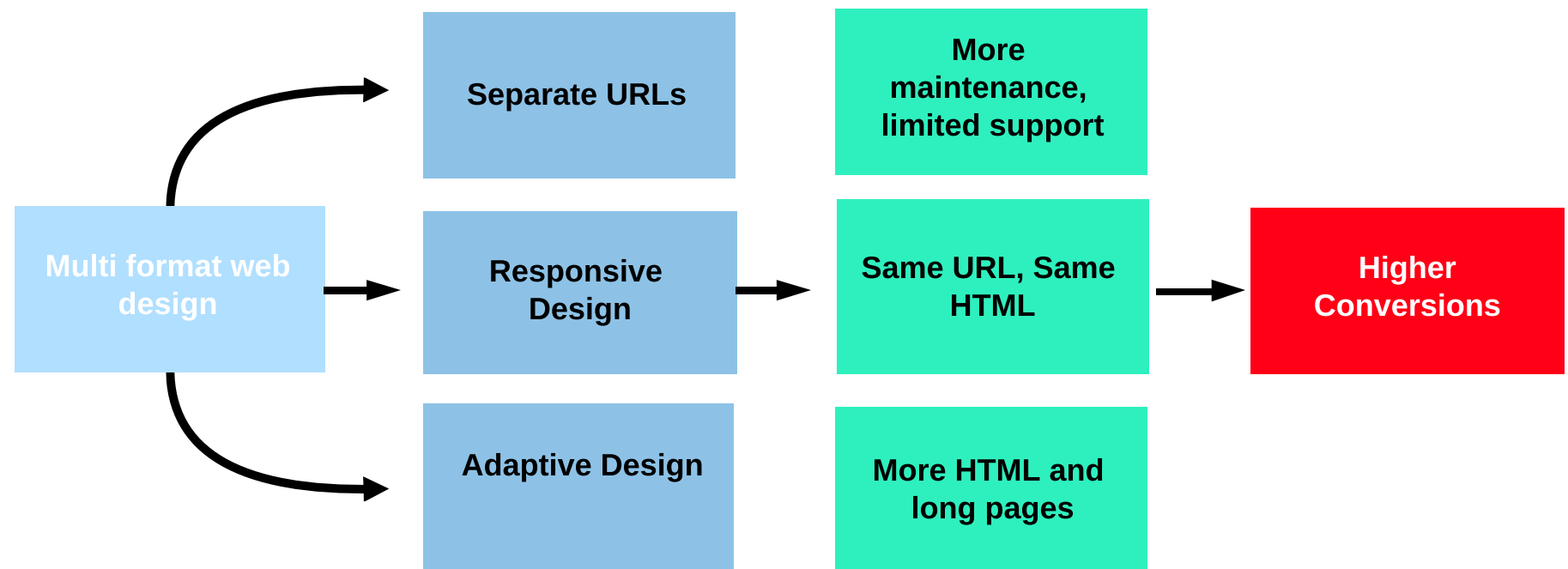
Aspects of RWD

Finally, responsive web design as emerged as the de-facto standard for website design. RWD is an ideology, instead of one single technology. Through the use of multiple design and development techniques, RWD helps provide a **fluid, user-friendly experience on all device formats – while using relatively simple coding syntax.** RWD makes use of the following design and development practices :

Flexible Grid Layouts
The flexible grid layout allows web designers to keep display of content proportionate and 'fluid', no matter how the website is resized. While there are multiple methods to achieve this, the most commonly used method today is with the CSS Grid control, that enables developers to divide a page into columns, and define how many columns a section of the page should use on screens of a certain size. As the page detects the size of the screen, it readjusts the content so it 'fits' right.

Flexible Images and Media
The second aspect of responsive design is flexible images. Implemented using CSS, this allows images on websites to be resized and realigned based on the screen they are being accessed on, and also allows images to be limited to a certain width, so they don't go off the page.

Advantages of RWD over other methodologies

1. RWD allows any website to be tailored for any device format, and does not necessitate any HTML or URL changes.
2. It is lightweight and enhances web usability without needing an app download or any native resources on the device except for those in use by the browser.
3. It is platform-agnostic.

For an example of responsive web design in action, check out our website at www.paramountsoft.net

CSS Media Queries (introduced in CSS3)
Finally, CSS Media Queries allow identification of the capabilities of the device a website is being accessed on, and for content to be loaded conditionally based on the result of that identification. This makes it possible for content that cannot be shown on a particular screen to be removed or replaced with alternate content that is more viable. It also allows page elements to be relocated, such as moving menus to a different part of the screen or minimizing them entirely.

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How to design responsively?

While the essentials of responsive design have remained constant over the years, several different forms of design have emerged based on need.

NPR.org, which is a text-rich website, for example, uses simple RWD to ensure that their articles are comfortably readable on any device. Several newspapers, such as the Boston Globe, also do so.

This is illustrated in the following example -

The *first image* alongside shows the NPR.org website at its original resolution on a desktop.
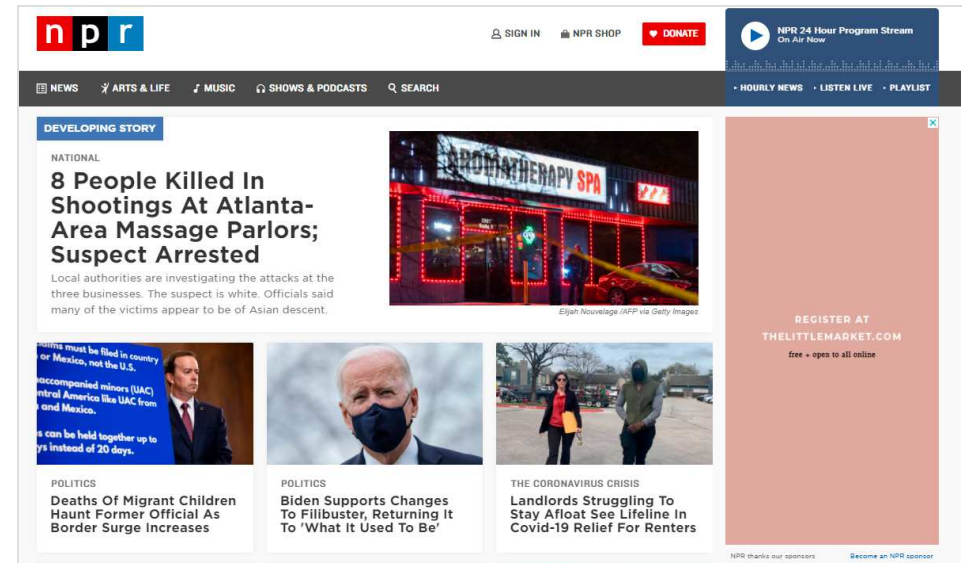

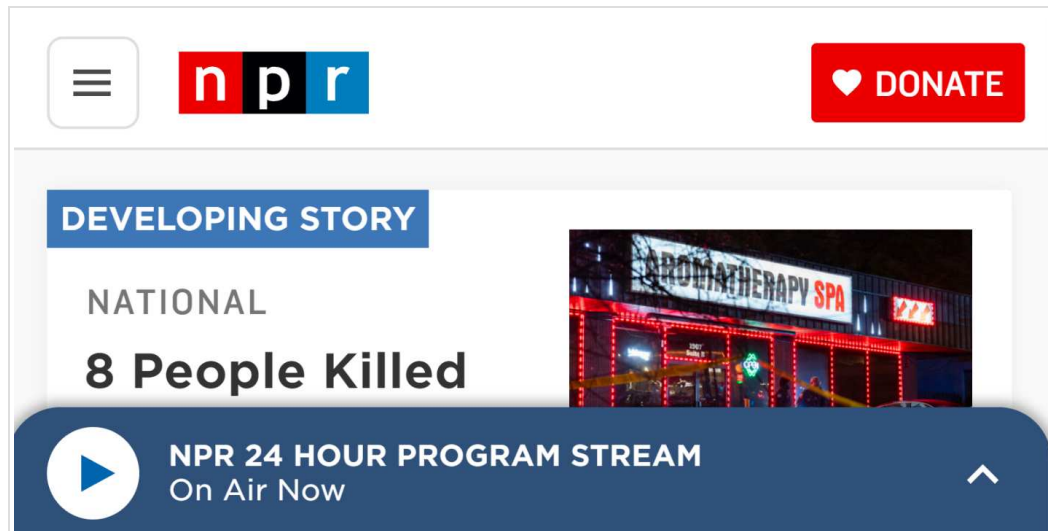*Image 1:* The NPR.org website at default desktop resolution

Image 2: The NPR.org website at 500% magnification on desktop

The *second image* shows the same website, at 500% magnification. This simulates the screen of a smartphone, and being a responsive site, the content gets realigned to fit the new resolution. The page retains the most important element on the website, the live stream

On the other end, the beautifully designed portfolio website of Gabriel Norman illustrates the higher end of responsive design. On a large desktop screen, the design is attractive –

But on a smaller screen, the design uses flexible grids, images and media queries to reposition the main menu to always be accessible as the user scrolls down the screen –
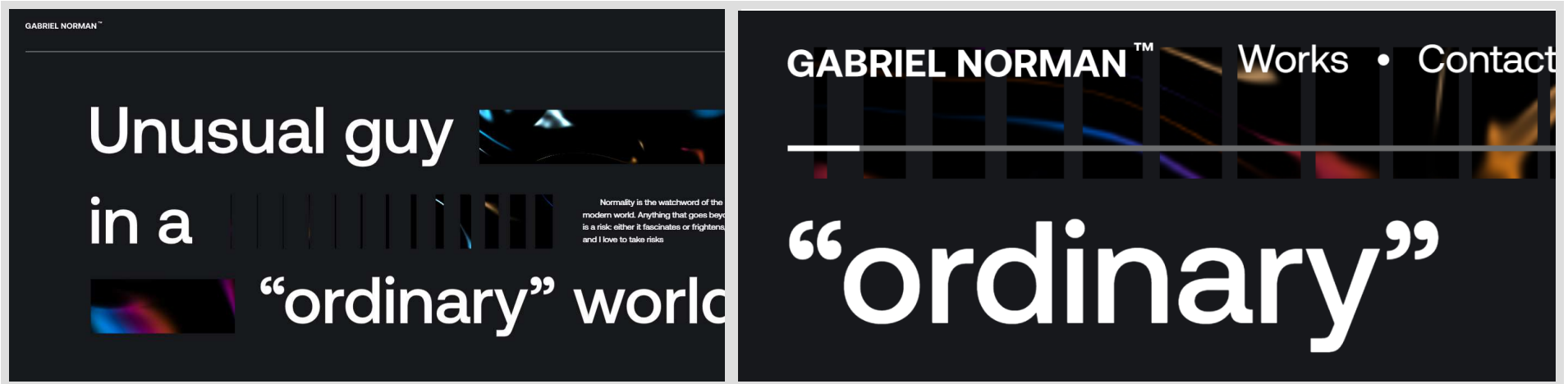
Comparing Responsive, Adaptive and Separate URL Design

Design Methodology	HTML Changes	URL Changes
Responsive Web Design	No	No
Adaptive Web Design	Yes	No
Separate URLs	Yes	Yes

The Key Tenets of Responsive Web Design
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Flexible Layouts

A website's flexible layout will allow it to display accurately on different screens. The key components of the layout to be considered are the Header and footer, Body, Content, Copyright, Navigation and Links.

Media Queries and Navigation

CSS Media Queries allow site rendering to be modified based on a variety of parameters, giving a lot of flexibility in design. Conversion of navigation links to drop-downs or creating a hidden menu accessible with a swipe makes navigation easy.

Viewport Settings

A responsive website uses meta tags in the HEAD section of the document to define how content has to be displayed. Generally, developers use percentages instead of pixel counts to make sure sizing is handled accurately

Reducing Load Times

To minimize site load times, conditional loading can be used to load only those site elements that are required by the user and loading other elements on demand.

Content Sizing

Content sizing refers to modifying the elements on the page – whether in absolute terms (pixels) or relative terms (percentages) so they work better for a vertical format (instead of traditional horizontal width formatting)

Choosing the right framework

Modern web-portal frameworks such as Drupal feature built-in support for responsive web design as well as several extensions that allow the development of intuitive websites that work well across formats.

Responsive Images

Using the max-image tag to restrict images from needing to scroll will result in responsive image loads. Another good practice is to supply image dimensions in the IMG element, which will allow space to be reserved for the image and reduce page load delays.

Choosing breakpoints

Breakpoints are used during layout of responsive sites to identify when design definitions are used. By focusing on content tailored towards smaller screens and expanding based on larger screen sizes, breakpoints can be optimized to a minimal count.

Tenets of Responsive Web Design

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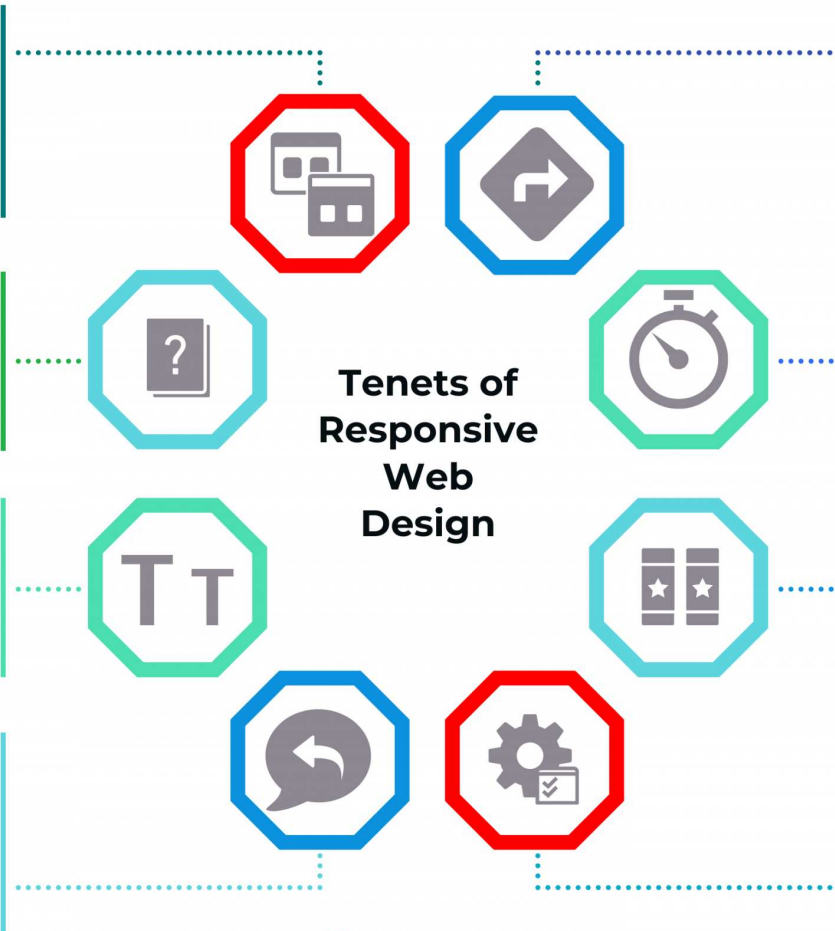
Advancements in RWD

As smartphones have taken precedence over the past few years, RWD has taken on a whole new importance, and spawned an advanced form to provide a middle ground between the mobile web and native apps on platforms such as Android and iOS.

Enter PWAs (Progressive Web Apps).

As Android and iOS devices have become the devices of choice for accessing the Internet, apps and the App Store have become the primary medium for content consumption. While these apps provide a plethora of capabilities, they also come with several disadvantages. Most apps today use massive amounts of storage and data bandwidth and are cumbersome to install. A large percentage of apps only get installed for a single use, often needing more time to install than for the actual usage.

PWAs solve the problems of native apps very elegantly. PWAs are 'installable' versions of websites that behave like native apps. They can be added to the applications screen, they support mobile functions such as GPS and Bluetooth. More importantly, though, they don't have the disadvantages of large download sizes, heavy resource usage or high system requirements.

PWAs vs native apps: Why PWA and RWD win

PWA	Mobile Apps
Cross Platform	Platform specific
Low Cost	High Cost
No installation needed	Installation Required
Offline usability	High Performance
Faster UI	Not indexed by Google
Low data consumption	Requires updates

Interested in PWAs and other modern web development trends? Read more about them on <u>our blog</u>.

Are PWAs for you?

The question is, do you need a PWA, or are your needs better served by classic RWD? PWAs utilize RWD extensively – they can be called the next iteration of RWD. But you don't necessarily need to invest in a PWA. Here's a few tips on when (And when not to) invest in PWA development –

- PWAs are great for use cases where access to mobile functions, such as GPS or other built in functions (e.g. Bluetooth), would be an advantage. One example would be the Google Maps portal, where access to your location data would make the experience much more efficient.
- However, when your focus is serving content that can be consumed equally effectively on a website or on an app (such as a newspaper or online magazine), it may make more sense to stick to RWD-driven web design for an aesthetic website.

In summary, If your enterprise needs app-like features, PWAs may be the way to go. If site speed and accessibility is a focus, RWD may serve you better – and give you more flexibility.

In most cases today, enterprises choose to implement both when the budget is available. This allows the best of both worlds, where users can choose to add the site as a PWA to their smartphones, while still having the option to use an immersive mobile website without installing anything.

Pinterest, for example, utilizes all three formats – a native app, a PWA, and a highly responsive web design.
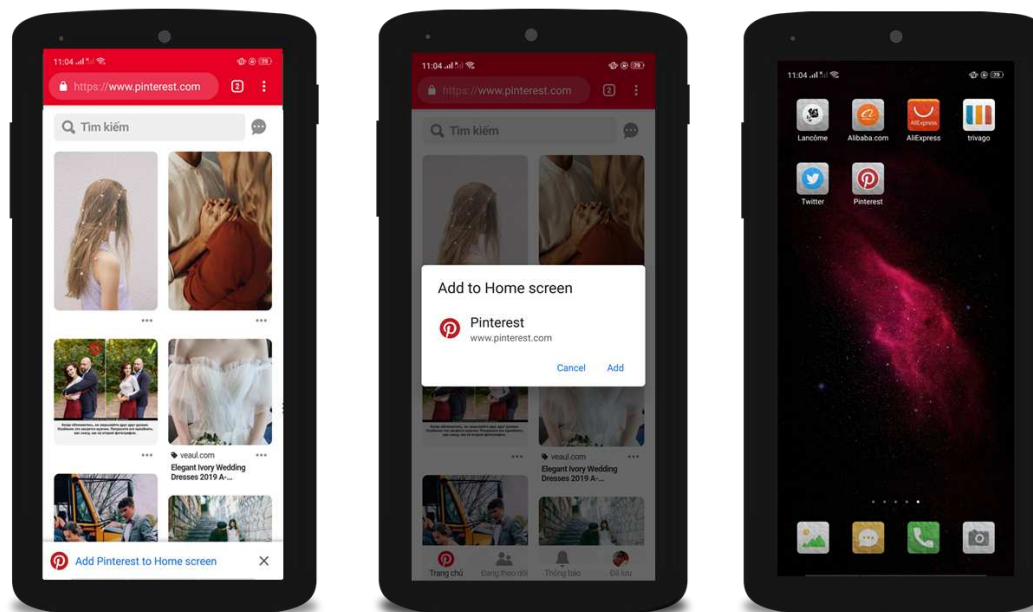
As you can see, the mobile web experience is just as good as the PWA or native app one!

Today, nearly every website on the internet uses RWD to a certain extent – but the experience is not always seamless. It is critical that a business has a fluid mobile experience. Back in 2012, Google put together these numbers for web consumers –

48%
of USERS
say they feel frustrated and annoyed when they get to a site that's not mobile-friendly

36%
of USERS
said they felt like they've wasted their time by visiting those sites

52%
of USERS
said that a bad mobile experience made them less likely to engage

48%
of USERS
said that if a site didn't work well on their phones, they felt the company didn't care about their business

Is my website responsive?

Is your business keeping up? There are ways to check whether your website is up to speed with the expectations of customers today. Google has put together a handy website checking tool which can help you evaluate your website – https://search.google.com/test/mobile-friendly

Also, Google today uses mobile content over desktop content for indexing, which means having a website that is responsive, works well with multiple formats and is built for a great mobile and desktop experience is critical to showing up on search results as well.

RWD with Modern Web Frameworks

Many modern websites use web frameworks such as WordPress, Drupal and Joomla to build their websites. Popularly known as CMSs (Content Management Systems), these frameworks can be extended to almost any use case, with a huge community supporting each framework and developing custom solutions for use cases ranging from e-commerce and technology company websites to artist portfolios and rich media and streaming portals.

RWD With Drupal

Of the three major frameworks (Drupal, Joomla and WordPress), Drupal serves as one of the preferred frameworks.

Unlike other frameworks, Drupal has a very structured documentation portal, with a page dedicated to responsive design and resources for organizations looking to develop responsive websites with Drupal - https://www.drupal.org/docs/mobile-guide/responsive-web-design.
The page is also updated frequently with new resources added as they become available.

Testing Tools

Collates a set of testing tools for evaluating your responsive site.

Responsive Systems

This section lists a set of possible solutions for responsive image management and a list of Drupal modules and examples built for image management.

Background Information

Introduction to responsive design and the mobile-first approach - this section contains links to key articles and posts that describe responsive web design practices and ideology, as well as some reading material.

Other Sections

include sections on responsive slideshows, videos and navigation menu best practices and Drupal-based solutions.

Detection

This section contains a comprehensive detection tutorial, which can be used to identify the form factor and device that is in use to access a website. It includes three forms of detection - Feature detection, Browser detection and Form factor, and device detection.

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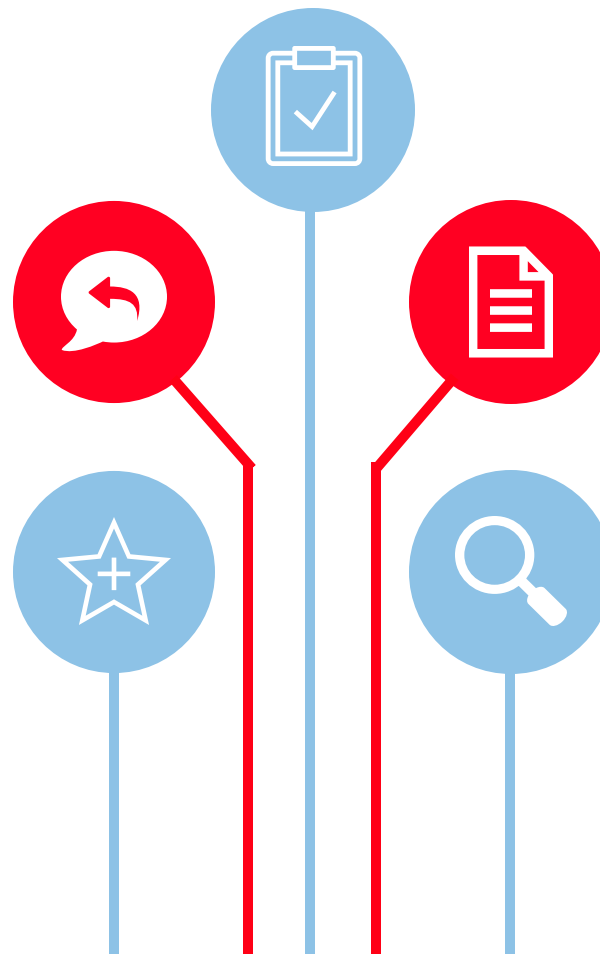
No other web CMS framework provides such comprehensive documentation for responsive design! Along with this, Drupal also includes a huge selection of themes with built-in RWD support. This information is also conveniently consolidated at https://www.drupal.org/node/1322126

Drupal Themes for RWD

Drupal supports several built in and stylized themes for building responsive sites. Some of the most popular include –

1.   **Omega**: One of the most popular theme designs, Omega is a base Drupal theme that has its USP in easy responsive site management, allowing users with any level of skill to easily create and adjust a responsive website.

2.   **ATCommerce**: ATCommerce is a responsive theme built-to-order for ecommerce businesses, affording a whole range of ecommerce friendly responsive features. The theme features support for the ecommerce modules Commerce and Ubercart. It also features great capabilities such as a responsive slideshow option, a very flexible color settings option and many more features.

Multiple other theme options exist, including **Pixture Reloaded** (built for an image-rich responsive website), **Aurora** and **Corolla**.

Omega Theme   ATCommerceTheme

RWD With Paramount

Is RWD for you? Even if you've got a mobile-friendly site today, there's always more you can do to make your website faster, more responsive, more functional and user friendly. With decades of experience working with both private and federal organizations to deliver compelling web experiences, we can help you put together a web strategy that maximized conversions, keeps visitors engaged and works across formats, operating systems, browsers.

We follow a tried and trusted development methodology, put together over multiple client engagements with federal and private sector customers. Our core capabilities include Drupal and a host of other modern web technologies -

CONTENT MANAGEMENT SYSTEMS (CMS) CORE CAPABILITIES

- Strategy and Consulting
- Development
- CMS Specific Staff Augmentation
- Commerce
- Performance Tuning & Optimization
- Personalization & CRO
- SEO

- Site Audit [Best Practices /Performance / SEO/Accessibility]
- Support & Maintenance
- Drupal 8 Upgrade & Migration
- Managed Hosting
- Theming
- AngularJS & React Development
- Java Development

Want to know more? Read through the <u>case study on our transformation</u> of a federal court website.

Interested in exploring an engagement? Reach out at <u>info@paramountsoft.net</u> or call us at 770-857-8348.