ReactJS:

A new technology for law firm websites.

A new generation of websites is emerging. They will be faster, more dynamic, and more engaging than ever before.

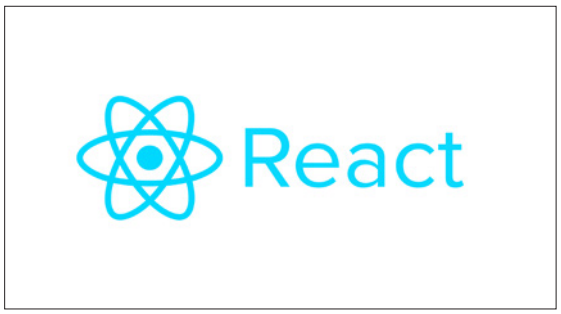

by Robert & Dion Algeri

great jakes

Introduction

Every few years a new website technology emerges that is so transformative that it makes earlier websites — those built without the benefit of that technology — look old and clunky. For example, a decade ago responsive design was unveiled and soon after, all non-responsive sites suddenly looked ancient. More recently, HTML5 had a similar effect.

Once again, *a new, new thing* has emerged that is changing the way that websites look and work. The new technology is called ReactJS (aka React) and it has become the standard for web development.

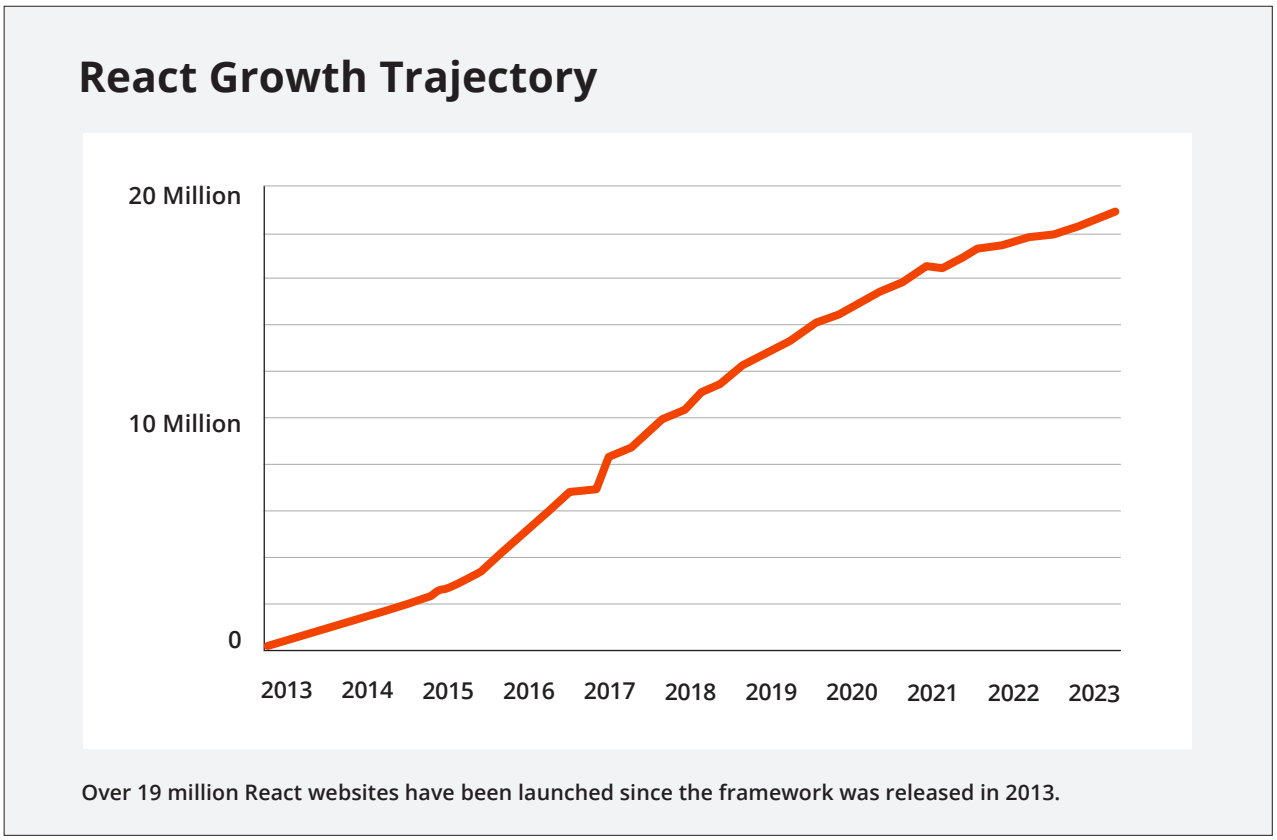


React, which was originally created by Facebook, was developed to enable faster, more engaging websites. In the process of speeding things up, the developers of React removed many of the barriers that had previously limited website designers. With these barriers removed, website designers and programmers have been unleashed.

The New Standard

In 2019, when we published the first version of this whitepaper, 1.3 million websites had been built using React since it was released in 2013. *Three years later, that number has grown to 19 million.*

Early adopters — like Netflix, Salesforce, Uber, The New York Times, and CNN — have been joined by practically every big name in tech and publishing according to BuiltWith, a web technology tracking service.



Over 19 million React websites have been launched since the framework was released in 2013.

So, what is React?

React is a front-end website technology. This means that it controls how the visible parts of your website look and work (as opposed to how the back-end CMS or database works). React was developed by Facebook and released as open-source code in 2013.

React came about because Facebook realized that a slow or unresponsive site had the potential to turn people away from their platform. So, around 2011 they started looking for technologies that could speed things up and improve usability. Seeing no existing solution that addressed all their concerns, they decided to build it themselves. And React was born.

React is a web development framework built in JavaScript code. This framework is a set of functions and methods that developers use for faster development. It's a foundation or starting point to build websites, the way that Karate is a foundation for self-defense. And, like Karate, React is only as effective as the person using it.

Soon after its release, developers began using React to build a new generation of websites that were vastly better than their predecessors. Among the improvements that React enabled were

- Lightning-fast page loads
- Elegant, animated page transitions
- More ambitious and engaging designs
- Greater security and stability
- Better SEO
- Fewer bugs

How does it work?

React has two defining characteristics that separate it from legacy website technologies:

- **Single-Page Architecture**
  React enables developers to build websites that require only a single pageload (which happens upon a visitor's arrival at the website). Even large, sophisticated websites require only one pageload.

Technical Notes:

The Great Jakes development team has requested that we include two important technical notes:

(1) Many of the beneficial qualities attributed to React in this document (e.g., graceful page transitions, improved security, SEO improvements) are not inherent to the React framework. Rather, React has enabled the Great Jakes development team to build websites with these attributes. In lesser hands, a website built with React might have none of these benefits.

(2) Some of the technical descriptions within this document have been greatly simplified to make React more understandable to a non-technical audience.

If you would like greater insight into the technical details, please contact us. We are happy to arrange a call with someone from our development team.

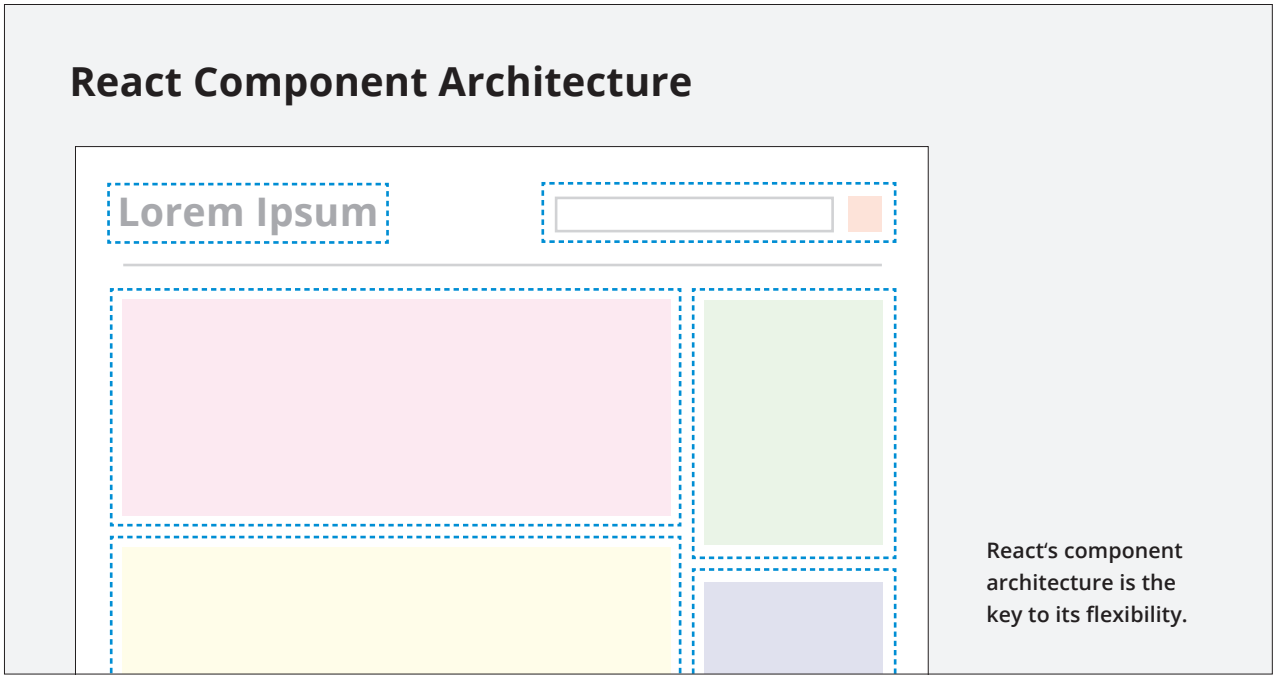
Here's how it works: When you visit any page of a React website, your browser receives a bundle of code that contains the functionality and formatting instructions for the *entire website* (every page). When you click on a link within that site, your browser creates the new page using the formatting information it already has. Furthermore, when it displays a new page, it will only update the content that needs to be changed, rather than reloading everything.

Unlike a conventional website, a React website doesn't have to query the server to get each new page's HTML. It just needs to fill in the blanks with text and images. This enables two noticeable user-experience improvements on React websites:

- Pages load extremely fast
- Super smooth transitions between pages (i.e. no flicker as the page unloads and then redraws)

Components

Another defining characteristic of React is its use of "components," which are building blocks for a web page. Each component is, essentially, a widget containing website formatting and functionality that has a specific task (e.g., displaying a location map or displaying an attorney's contact information).



React's component architecture is a much more modular and flexible way of building a website than the traditional approach of organizing a site's structure, functionality, and visual style separate from each other. For example, React components can be reused across many pages, which makes it quick to build and modify websites.

By embracing these two things, (a) a single page architecture and (b) a component structure, React removed some of the biggest limitations of traditional web technologies. This has allowed web designers to build websites that are faster, more engaging, and more secure. More about this below.

Benefits of React

- **Lightning-Fast Speed**
  The most obvious benefit of React is the lightning-fast pageloading that it enables. A faster site equates to improved usability and user satisfaction, as a lag between clicks is a major source of user frustration. Speed can also improve your Google search rankings (more about this soon).

- **Page Transitions**
  In addition to lightning-speed, the single-page architecture of React allows programmers to create smooth, graceful transitions between pages.

  For example, React websites can have elegant fades between pages, like a slideshow. Or one page can morph into another. Or an animated sequence can "build/unbuild" each page, as you surf the website.

  On a conventional website, artful page transitions are difficult, if not impossible. This is because each time you click on a new page in the navigation, your browser must do three things: (1) discard the old HTML, (2) download the new HTML, and (3) draw the new page.

Like any tool, React is only as good as the craftsman wielding it. In lesser hands, a website built with React might not have the benefits described in this document.

These three steps take time and invariably result in clunky-looking page transitions. *All three steps are eliminated by React's single-page architecture.*

- **Search Engine Optimization**
  React websites are fast, and this gives them an SEO advantage with Google. In recent years, Google has made clear that pageload speed will increasingly be used as a factor in ranking websites. So, if you're looking for top placement on Google's search results page, React can help you get there.

- **Security and Stability**
  React allows programmers to build websites that are much less vulnerable to attacks than are traditional websites. The security benefit is derived from the fact that React is a strictly front- end technology that can be separated completely from the back end and placed on a different server.

  To understand the potential security benefit of React, it's helpful to understand that most traditional websites are run on a single server, in which the website code has direct access to the database. This means that an attack could not only bring down your website, but compromise your data.

  React, on the other hand, separates the front end and back end. As a result, the website is much more secure and stable. The added security stems from the fact that the front end and back end can be placed on separate servers, *and their relationship can be obfuscated.* Let us explain:

  a. **Server #1: Back End –** This server runs the CMS and database. Because of the unique architecture of React, it's possible to configure your servers in a way that obfuscates the location of the back-end server. T*his means that hackers won't be able to find it (never mind attack it)*. As a result, your data are secure.

  b. **Server #2: Front End –** This server delivers the actual web pages to visitors and thus is publicly accessible. However, it is virtually invulnerable to malicious attack for two reasons:

     - Its only function is to serve "flat files" and pre-compiled data, which do not require much computing power. Thus, the front-end server has the capacity to withstand a significant attack or rush of traffic that would crush a conventional website server.

     - The front-end server does not have the capability to process code, such as malicious scripts. So, even if a hacker penetrated the server, there isn't much that could happen.

- **Little or No Downtime**

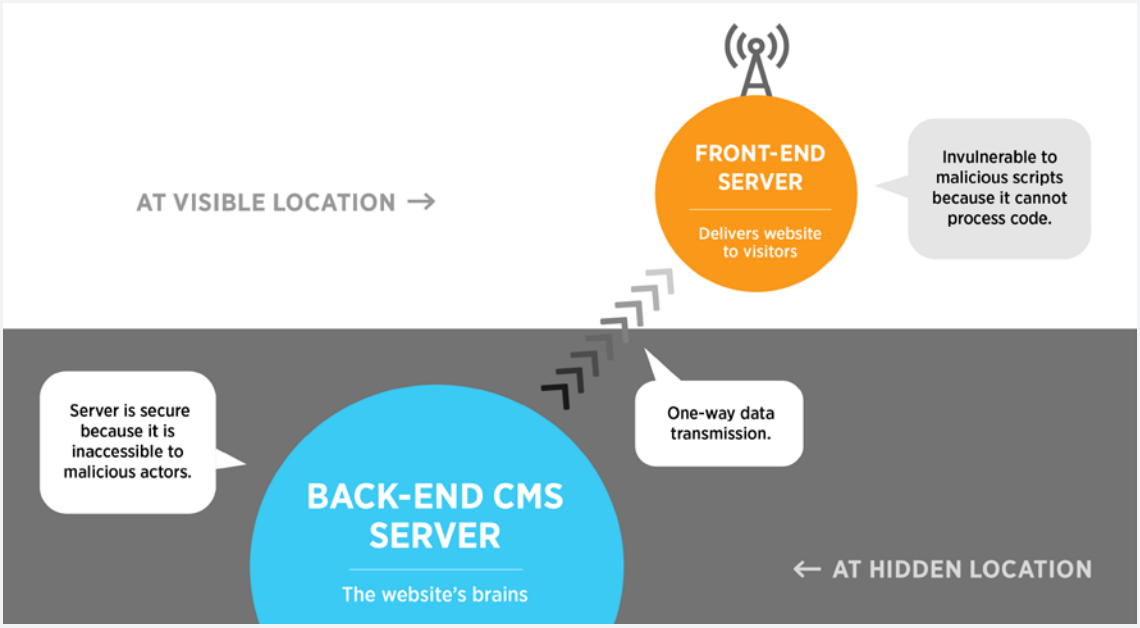
  The server setup enabled by React creates a highly stable environment that results in little, if any, website downtime. Much of the reliability is derived from the invulnerability of the front-end server (described above). However, there is another factor.

  With the multi-server setup, previously described, your back-end server could be entirely disabled — and your websites will continue to work as normal (as far your website visitors are concerned). This is possible because the front-end server operates entirely independently from the back-end server.

Furthermore, image content is located on a CDN (content delivery network), which operates independently of the servers (the CDN was left out of the above diagram for simplicity).

As you update data in the CMS, the back-end server periodically connects with the front-end server to update the site. Otherwise the servers operate separately, which greatly enhances the security and stability of your website.

React-Enabled Server Architecture



React allows for a novel multi-server configuration that is much more secure and stable than the conventional hosting setup.

- **Design Flexibility**

  It is not uncommon for developers to tell web designers that their ideas are impractical (or impossible) to implement. This is because actualizing whiz-bang designs often requires developers to work around the limited capabilities of traditional website technologies.

  React is changing this. Because of the flexibility of the React framework, a new generation of web designers is empowered to create new and innovative website features (both big and small).

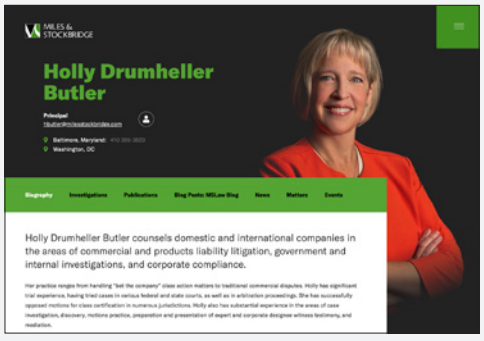
  For example, we recently added a neat design flourish to a website, thanks to React. The attorney bio portraits on the Miles & Stockbridge website elegantly resize when you click from the main bio page to a bio sub-page (e.g., Publications). This flourish was previously rejected by our developers when it was proposed for an earlier website. However, once we started working with React, it suddenly became practical to implement.

- **Future Proofing**

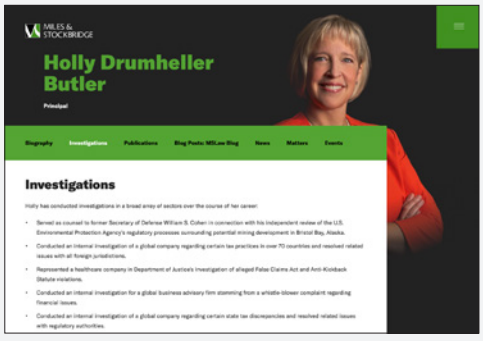
  Things inevitably change. Eventually you will want to make changes to your site to accommodate new features, sections, and/or functionality. React's flexible architecture makes this easier than when using legacy website technologies.

React-Enabled Animated Page-Transitions

Main Bio Page



Bio Subpage



On MSLaw.com, when you click from the main bio page to a bio sub-page, the page format smoothly morphs to accomodate the new content. This page transition was impossible before React.

For example, we recently retrofitted an older website to be ADA compliant. The website was built using conventional technologies that are inherently rigid. This made the process difficult for us and expensive for the client. Had the site been built with React's component structure, the process would have been much easier thanks to granular control over every element of the site.

Hiring an Agency in a React World

There is a big question facing a law firm when it contemplates redesigning its website. Should it hire one agency or two?

- In the one-agency approach, a single organization handles all aspects of the project, including the design and the development. Great Jakes uses this approach.
- With the two-agency approach, you hire one agency that specializes in design and a second technology agency that builds the website (based on designs handed to them).

In the past, there have been merits to both approaches. However, as websites have evolved to become more dynamic and interactive, the benefits of hiring a single end-to-end agency have become clearer. And the growth of technologies like React is further clarifying that choice. Let us explain:

- **Yesterday's Static Web**
  In the early days of the web, sites were fairly static. There were few moving pieces to consider, so it was easy for a designer to hand over a set of mockups to a programmer to implement. And it wasn't a problem if the designer and programmer worked at different companies.
- **Today's Dynamic Websites**
  Today, websites are much more dynamic, and thanks to the emergence of technologies like React this is only increasing. Highly dynamic content and pages with elaborate animations and

React is a flexible technology that will allow your website to adapt to your needs throughout its 5-9 year lifespan.

page transitions are becoming the norm. In short, there are many more moving pieces that need to be considered in modern web design. And mockups — even animated mockups — are no longer enough to communicate the information necessary for successful implementation.

The Advantage of One Agency

A single agency is more likely to yield a better-looking website, in which the design and technology work together in a cohesive way. Why? For two key reasons:

- **Better Collaboration**
  Building dynamic websites requires lots of collaboration between designers and programmers to get all of the details right. For example, midway through implementation, programmers often discover that a feature can't be implemented as designed. When designers and programmers are part of the same team, this kind of problem is much more likely to be addressed properly.

- **Project Ownership**
  With one agency, it's clear who is to blame. So, that agency is incentivized to do what it takes to make the job right. And sometimes, that can mean making significant changes to the design halfway through implementation.

In a world of highly dynamic websites, driven by technologies like React, the one-agency approach has the clear advantage.

Conclusion

React is on track to make significant inroads into the world of law firm websites. In fact, we predict that within the next two years, the majority of new websites built for the Am Law 200 will include this technology. The reasons are two-fold.

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- **Website agencies will push for it.**
  From a developer's perspective, the advantages to using this technology are numerous. Agencies are always looking for ways to build better websites, faster. So, we expect that most agencies will soon do the retraining and retooling necessary to work in React.

- **Law firms will start demanding it.**
  We expect law firms to soon begin requesting React in their website RFPs for two main reasons:

  - Differentiation – Progressive law firms want to differentiate themselves from their look-alike competitors. A fast-loading React site, equipped with animated page transitions, is one way to make your firm look like it's on the cutting edge.

  - Future Proofing – Firms are always looking for flexible solutions that will adapt to their needs throughout the 5-9 year lifespan of a typical law firm website. And React can offer this.

More Information

React is a complex subject. We did our best to explain the technology and business benefits in a way that was easy to understand. However, we undoubtedly left some questions unanswered or glossed over some aspects of the technology that might be important to you. So, if you would like some additional information, please reach out to Robert Algeri at 212-699-3684 or ralgeri@greatjakes.com.