



Office of Technology Strategies (TS), Architecture, Strategy & Design (ASD)

A VA Executive's Guide to Rich Internet Applications

INTRODUCTION

In previous TS Notes, we reviewed enterprise application topics, such as the application service layers and device independence. This TS Note returns to enterprise applications by looking at the user interface or presentation layer. Specifically, this note provides an overview of rich internet applications (RIAs) and dynamic websites. In the constantly evolving customer- and patient-centric environment, applications must adapt to how Veterans and VA users access, view and update VA information. Web-based applications are not only easier and cheaper to develop, but they offer increased functionality and can be accessed on any device.

BACKGROUND

Dynamic Websites

Static websites are basically pre-configured content displayed in a browser on a web page unconnected to other information available to the same web server. This is the way websites operat-

ed in the early days of the internet; end users had little interactivity and access to new information was time-consuming. Dynamic websites display multiple sets of "pages" or information in the same window, and allow users to interact with the display as well as the information. For example, if you use the search function on an e-commerce site to find multiple products, instead of multiple pages for each product, the site will rearrange what the user sees on a single page.

A more dynamic website means applications can use enhanced functionality to run purely on the web. A dynamic website might run an application within the site or function as an application itself. However, even early web applications had limited functionality or interactivity, and users wanted a "richer" experience.

Plug-ins, Extensions, Frameworks

Conceptually, RIAs have been around for more than 15 years, when early web applications became possible. As

This newly established office within OI&T's Architecture, Strategy & Design (ASD) interacts not only with the ASD pillar offices, but also with multiple stakeholders within OI&T and with strategic offices across the enterprise. TS works closely with IT and business owners to capture business rules and provide technical guidance as it relates to Data Sharing across the enterprise, specifically for inter-agency operability.

the market for richer web-based applications has grown, RIAs have now become a standard feature of computing and new RIA frameworks have been introduced which are continuously improving the features and capabilities of RIAs.

In order to run these applications, the user does not need to install it on their device (the "client"). Rather, the client web browser runs the web-based ap-

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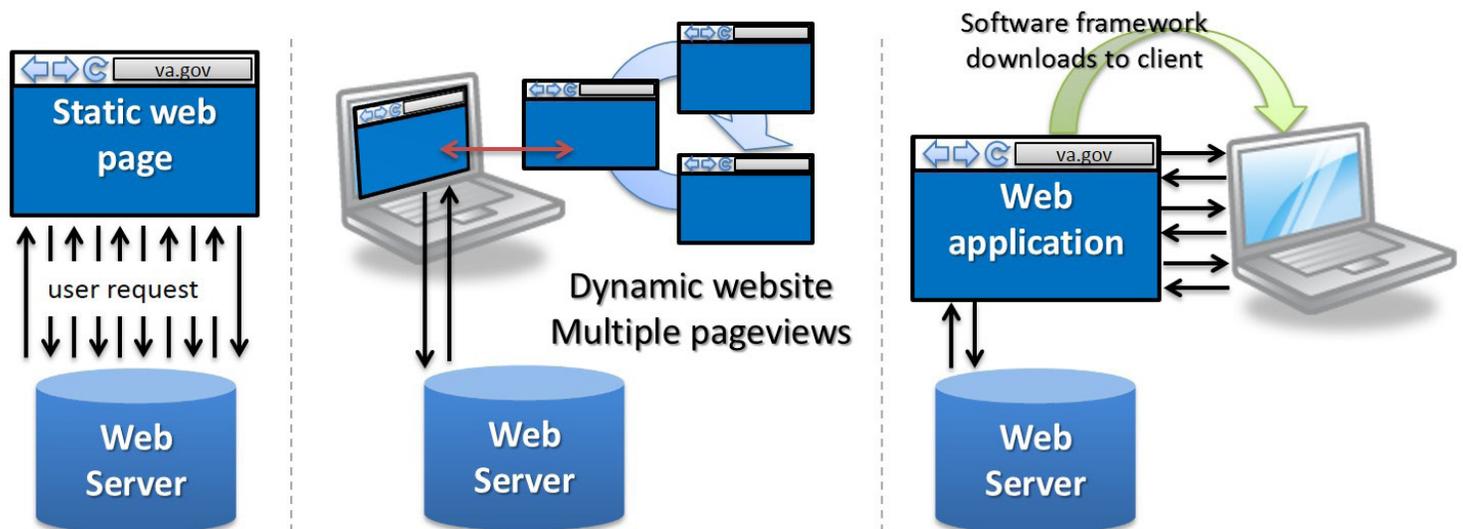


Figure: From Static to Dynamic - Richer Web Functionality

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plication, which then relies on the client for local processing. This limits interaction between the web server and the client, and enables any client device to run the RIA via a web browser.

One key component of a RIA is the browser plug-in, which contains the application's software framework, runs off the client browser and defines the rich graphics or interface for a web page. Microsoft Silverlight is a RIA that uses a plug-in to launch a streaming media player within the browser. In recent years, extensions have become more popular than plug-ins. Extensions offer richer functionality by modifying or enhancing the web browser's code. The Google Chrome-cast extension modifies the Chrome browser to allow users to "cast" tabs to external displays.

Recently, newer dynamic web and RIA frameworks have developed ways to provide rich functionality without plug-ins or limited extensions. Many of these newer frameworks or platforms use the technologies or libraries listed below:

- *HTML5* – Offers the same functionality as traditional RIA frameworks, but does not require browser add-ons; the code is simply displayed appropriately (i.e., embedded video or drag-and-drop) in the browser. HTML5 is typically seen as a replacement for Flash.
- *jQuery* – A JavaScript library that can be used across platforms to build web applications that use AJAX-based server interactions (see below). jQuery UI offers widgets, direct interaction, and other features.
- *AJAX* – Asynchronous JavaScript + XML (AJAX) is a collection of web development technologies used to build web applications that rely on asynchronous ("in the background") data calls to the web server. This is an alternative to traditional RIA frameworks (like Silverlight or Flash).

RIA AND VA IT STRATEGY

The VA's IT vision is, in part, defined by the need to support "any device, anywhere, anytime" for VA patients, customers, staff and partners. As such, browser-independent applications (which describes rich internet applications or dynamic websites) form one of the 12 key attributes of the IT vision, which states that "enterprise applications [must be] built as dynamic websites that adapt to how browsers need to translate and display information." The emphasis on browser and device independence features across the

BENEFITS

Interactivity – direct interaction (e.g., drag-and-drop features) and seamless user experience across devices.

Performance – RIAs use client for local processing, leading to faster processing speeds and improved server performance.

Security – by design, RIAs automate security updates, as well as run in secure sandboxes separate from client machines.

Application Technology category, including:

- *Development Tools* – For legacy modernization, the long-term goal is migration to thin client (e.g., HTML5) and web applications.
- *Software Engines* – The specific focus here is on a long-term goal for web- and mobile-based context management, so users can move between web-based or mobile apps.
- *User Interfaces* – The long-term goal is browser independent web-based frameworks, device-independent mobile frameworks, and platform independent RIA frameworks like HTML5 and jQuery.

In the evolving healthcare and benefits environment, users are increasingly relying on a diverse set of platforms, web browsers, and mobile devices. This means applications must be accessible to any user's preferred method of access. Further, increasing demand for telehealth and mobile health apps can be met with RIA and dynamic web technologies, like those discussed in this note. Richer web applications, dynamic websites, and overall device or browser independence are necessary investments as VA adapts to this changing environment to meet the needs of Veterans.

If you have any questions about Rich Internet Applications, don't hesitate to ask TS (askTS@va.gov) for assistance or more information.

Check out earlier TS Note editions [here](#)

(http://www.techstrategies.oit.va.gov/docs_ctsnotes.asp).