

White Paper

Enhance the User Experience by Deploying Web Services and AJAX

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Standard Windows programs are usually fast and efficient because they take advantage of your computer's memory and disk space. However, this comes at a price that is usually realized several times over when the application undergoes change and new versions must be distributed. Even a relatively small fix might require a complete re-installation. Web-based applications, on the other hand, rely on the web browser and any distribution is limited to updating the server end of the client-server equation. This simplifies distribution, but can also have a negative impact, namely usability.

Prologue

Until recently, web-based applications have been slow and less-than-ideal from an end-user's perspective. The slightest informational or data update requires a complete refresh of the display, which takes time and detracts from the overall smoothness of the application. For example, for a HR program designed to provide employees with the ability to make informed decisions about their benefits, the requisite calculations most likely require not only the acquisition of data from the server, but the implementation of a complicated algorithm tailored to that user. This manifests itself with a "screen-flash", a pause while the page is fetched, or some other type of delay.

Because users generally judge an application by how fast it performs and how well it appears on screen, any lack of immediacy is a detriment. Users want instantaneous responses. Users expect that calculations will take place in a second or two. Users trust a program that rewards their efforts with a fast answer to their question. Until

recently, making web-based applications behave like desktop programs has been more of a goal than a reality.

AJAX

What's changed? From a technology perspective, very little. From the perspective of how technical tools can be reassembled, quite a lot. The ability to provide small conduits for data exchange between the web Browser (such as Internet Explorer) and the web server (IIS, for example) has not only been exploited, but given an identity: AJAX. AJAX stands for Asynchronous JavaScript and XML. While there are certain technical considerations for how AJAX is used and a set of rules by which programmers must abide in order to apply it, what AJAX comes down to in application terms is that easily deployed programs can be as fast as their more arduously distributed cousins.

The essentials of gaining any kind of impact from using AJAX relies on combining the browser's inherent programming language – JavaScript – with a backend or server-side service. In practice, the browser invokes a coded function that links to a service running on the web server. That service most likely provides data access capabilities to get information from an Oracle or SQL/Server or other relational database management system; the service might incorporate a complicated algorithm; it could also require access to tables or other data residing on some other server. After being invoked by the browser's JavaScript command, and after executing its instructions, the service then returns a set of values to the browser.

"Users want instantaneous responses"

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About the Author

Mr. Castlewitz is Senior Software Developer with over 15 years of experience designing and developing web-based and client/server applications. As part of these efforts, he has exhibited strengths in object oriented analysis and design, and web application development.

Throughout his career, Mr. Castlewitz has been responsible for the design, development, and implementation of employee service solutions, interactive-multimedia, Internet/Intranet/Extranet applications, and physical security programs.

"Like any improvements, this one comes with a price"

These values are subsequently used to update specific sections of the user's screen.

It all happens behind the scenes.

Immediate Results

To the end-user viewing the web page on his or her screen, the result is instantaneous feedback – an immediate response. The request for a tax comparison calculation between one set of choices and another is followed within moments by a display of new information. A chart can be suddenly redrawn or a scale can be adjusted. The page reacts without pause.

While the end-user enjoys this expanded usability, those in IT charged with maintaining and distributing the application reap all the benefits inherent to a centralized web-based program.

There is no need to instruct users in how to install the product. There is no need to inspect individual machines to make sure they are of the proper caliber to run the program. There are no expensive distributions of new patches or upgrades.

Like any improvement, this one comes with a price. The developers need to be AJAX-savvy, for one thing. They need to understand how to program web services. They need to be more knowledgeable than a web designer might be in terms of object-oriented programming and data driven applications.

Value Added

For many programs, especially those that require wide distribution and rely on backend databases, the value of such technical expertise is worth the cost because it will spell the difference between a

well-accepted web-based application and a mediocre one. It might also be the difference between a product that the end-users enjoy using, as opposed to one they dread.