

AJAX Interaction in Adaptive Hypermedia

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Abstract.

The World Wide Web becoming a prime publication for information dissemination, entertainment and communication with its full potential by developing protocols and guidelines that are ensure long-term growth, in pursuit of its mission. The web is continually increasing in size and importance. The success of web made it very difficult to find the appropriate information in an ocean of over 3 billion pages. Therefore, it is very important to communicate a message to the visitors in an optimal way. In this paper, we propose AJAX based interactive technique, which can create asynchronous independence of communication with the web server. With AJAX, web applications can be much more receptive and perceptive.

Keywords

www, asynchronous, xml, Adaptive Hypermedia.

1. Introduction

The social value of the Web is that it enables human communication, commerce, and opportunities to share knowledge. One of World Wide Web Consortium's primary goals is to make these benefits available to all people, whatever their hardware, software, network infrastructure, native language, culture, geographical location, or physical or mental ability. The W3C develops interoperable technologies to lead the Web to its full potential [1]. Many web sites quickly sprout intricate collections of pages and hyperlinks as they begin to mirror the complexity of the information they convey.

The problem of good web design is compound by several factors beyond the fact those different visitors have distinct goals. First, the same visitor may seek different information at different times. Second, many sites outgrow their original design, accumulating links and pages in unlikely places. Third, a site may be designed for a particular kind of use, but be used in many different ways in practice; the designer's prior expectations may be violated. Too often web site designs are fossils cast in HTML, while web navigation is dynamic, time-dependent, and idiosyncratic.

Fortunately, web users interact directly with a server maintained by the inventors of the service or authors of the content being served. In [Perkowitz and Etzioni, 1997], International Joint Conference on Artificial Intelligence, Artificial Intelligence community address this problem and emphasis to create adaptive web sites: “*web sites that automatically improve their organization and presentation by learning from user access patterns*”[2]. While we observe a particular situation from the available information on the web page, again it is cumbersome. The possible ways in which the presentation of the web page differs are the information available on the page may be different for different users and a web page has many hyperlinks to other pages. Some of these links may be appropriate only for some categories of users. So even though the information on a page may be interesting for two or more types of users’ different presentations are needed in order to have different links to other pages [3]. Since then a lot of contemporary research is being carried out in the field. De Bra and Wu et al [4, 5] provide a general reference model for Adaptive Hypermedia applications.

On the other side, AJAX (Asynchronous JavaScript Technology and XML) interactions allow for a clear separation of presentation logic from the data. An HTML page can pull in bite-size pieces of data as needed rather than reloading the whole page every time a change needs to be displayed. AJAX will require different server-side architecture to support this interaction model [6]. Traditionally, server-side web applications have focused on generating HTML documents for every client event resulting in a call to the server. The clients would then refresh and re-render the complete HTML page for each response. Rich web applications focus on a client fetching an HTML document that acts as a template or container into which to inject content, based on client events using XML data retrieved from a server-side component.

2. Importance of Study

Ajax is an important development for Web applications, and its importance is only going to grow. AJAX uses asynchronous data transfer between the browser and the web server, allowing web pages to request small bits of information from the server instead of whole pages. AJAX-based web development differs drastically from traditional Page & Action oriented programming. Instead of submitting forms to actions and receiving a new page from the server, developers can send small sets of data to the server as the user interacts with the application. Web applications can send and retrieve data without reloading the whole web page. This is done by sending HTTP requests to the server and by modifying only parts of the web page using JavaScript when the server returns data. AJAX incorporates, Standards-based presentation using XHTML and CSS, Dynamic display and interaction using the Document Object Model, Data interchange and manipulation using XML and XSLT, Asynchronous data retrieval using *XMLHttpRequest* and JavaScript binding everything together. AJAX is a web browser technology independent of web server software. Integrated AJAX Engine in the Adaptive Hypermedia Architecture can drastically reduce the retrieval time of a web page from the server. User is never

staring at a blank browser window and an hourglass icon, waiting around for the server to do something [7].

3. The Anatomy of an AJAX Interaction

A web application contains a static HTML page, or an HTML page generated in JSP technology contains an HTML form that requires server-side logic to validate form data without refreshing the page. A server-side web component will provide the validation logic. AJAX interactions used for Server-side Real-time form data validation, Refreshing data and server push, AJAX techniques to get a set of current data without reloading a full page. An HTML page can obtain data using a server-side proxy or by including an external script to mix external data with your application's or your service's data. AJAX techniques can be made to create single-page applications that look and feel much like a desktop application [6].

4. Assimilate AJAX Engine into AHA Architecture

The overall architecture of AHA shows which files play a role in assembling or filtering a single node, and how the communication works between the client, server, and AHA engine.

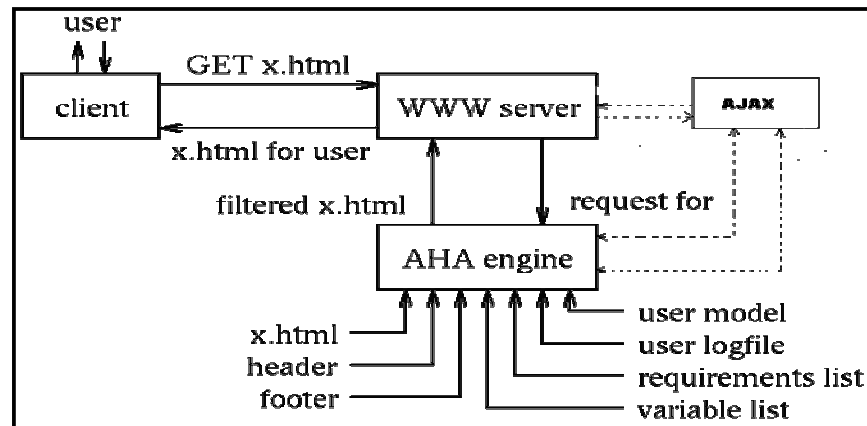


Fig. 1. Proposed Architecture.

5. Final Thoughts

AJAX-based applications with APIs for tying in HTTP processing, databases, web services, XML processing, and business objects. With a better understanding of this interaction model with Adaptive Hypermedia, web applications can become more interactive, providing the end user with a better experience. AJAX also requires a great deal of client-side JavaScript technology and CSS. The open standards used in AJAX are well defined, and supported by all major browsers. AJAX applications are browser and platform independent. (Cross-Platform, Cross-Browser technology). As the AJAX programming model evolves, existing technologies and frameworks will make this transition easier. AJAX is very constructive to relate to adaptive hypermedia to have interactive communication between user and the web server asynchronously.

6. Future work and Conclusions

This work is part of our ongoing research effort. There is a lot of research work to do in this area. In this paper, we focused on an AJAX technique, which reveals the data retrieving from web server that collects user evaluations of pages on a particular website. Some of these focus solely on the client side, providing easy ways to add visual effects to user pages. Creating a successful AJAX application requires a holistic approach from user interface design through JavaScript design to server-side architecture. The combined technology makes internet applications smaller, faster and more users friendly.

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