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OJAX: Facilitating dynamic access to repository metadata

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With the evolution of the Ajax development paradigm, a new generation of Web-based applications is emerging. For the first time, the dynamism and richness of desktop applications are available to their Web-based cousins. This has far-reaching implications for the potential usability and responsiveness of repository systems.

Ajax, or Asynchronous JavaScript + XML, is not a single technology but a general approach to the development of interactive Web applications. It involves the use of JavaScript and XML to enable asynchronous communication between browser clients and server-side systems. This is not a new idea; various forms of this concept have existed for several years. But, it was not until February 2005 that Garrett¹ adopted the name Ajax for this trend.

In a traditional Web application, user actions trigger HTTP requests to a Web server. After every request, the client must wait for a response, thus potentially delaying the user. When the response arrives, it is in the form of an entire HTML page.

In an Ajax-enabled Web application, user actions generate JavaScript calls to an Ajax engine. If the engine needs data from the server, it requests this asynchronously in the background. Thus, rather than requiring the whole page to be refreshed, the JavaScript can make rapid incremental updates to any element of the user interface via brief requests to the server.

OJAX² provides a highly dynamic AJAX-based user interface to a federated search service for OAI-PMH-compatible repository metadata. As such, it illustrates the potential impact of Ajax-empowered systems on the future of repository software.

OJAX comprises a client-side GUI, implemented in JavaScript and HTML, and server-side metasearch Web Services, implemented in Java. Apache Lucene is used to index and search the metadata.

The use of Ajax has resulted in such a dynamic interface that distinct options for simple and advanced search and for refining a completed search are not necessary in OJAX. Users do not have to make a complete choice of all the options they might want to try before they see any results. Rather, they iterate towards the search results they require by manipulating the results in real time. Thus, OJAX attempts to reduce the commitment necessary from users before they receive feedback on their actions. This is further illustrated in the auto-completion of user entries and in the triggering of an immediate search whenever an entire search option has been selected.

Navigation between separate search result pages is not necessary in OJAX. Instead, results are presented in what appears to the user as one seamless scrollable list. In fact, Ajax technology is being used to fetch more search results from the server when the user begins to scroll off the visible area.

¹ Garrett, J. J. (2005, February 18). Ajax: A New Approach to Web Applications. Available at: <http://www.adaptivepath.com/publications/essays/archives/000385.php>

² OJAX is available, under an Apache license, at Sourceforge: (<http://ojax.sourceforge.net/>). Version 0.5 of OJAX includes its own OAI-PMH harvester and an example repository.

This session will introduce OJAX, explaining how Ajax techniques were used to improve the interactivity of the service. Future research directions will be outlined. Group discussion will then be facilitated on the potential implications of Ajax technology for repository systems.

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