

Ajax in the Enterprise

Whitepaper

Learn about:

Rich Internet Applications (RIAs)

Ajax Strengths and Challenges

Ajax 360 for the Enterprise

Introduction

Ajax is quickly emerging as the best solution for developing a new generation of functionally rich, highly interactive Web applications — Rich Internet Applications (RIAs). Web 2.0 applications from companies like Google, Yahoo, and Flickr all use Ajax extensively. As a result of the success of these consumer applications, more businesses now use Ajax for delivering the same rich user experience to their customers and internal users.

How rapidly is Ajax use growing? Gartner estimates that by 2010, at least 60 percent of new application development projects will include the RIA technology. Another Gartner study reports that, "Ajax has become one of the 'hottest' development approaches in IT. Ajax is being implemented into development toolkits, and enterprises will quickly adopt it during the next year." A recent survey by SitePoint and Ektron of 5,000 Web developers, "The State of Web Development 2006/2007," reports that 46 percent of respondents plan to tap the Ajax model for a project in the next 12 months.

These new requirements mean that businesses must find ways to incorporate Ajax into their existing application development and deployment processes and environments. This paper explains the selection criteria Enterprises have to consider in choosing an Ajax solution provider.

Rich Internet Applications – Today's Fast-Growing Requirement

In recent years Web 2.0 has become a popular term to describe a new generation of highly interactive Web applications. Compared to traditional Web applications, Web 2.0 applications are significantly more sophisticated, with the most drastic changes manifested in the user interface. These new generation user interfaces came to be known as Rich Internet Applications or RIAs. In many cases, Web 2.0 has become synonymous with rich, interactive, user-friendly interfaces based on RIA technology.

For businesses like e-commerce, Software-as-a-Service, and interactive media, RIAs drive bottom line results — the Web application is the revenue stream. For external-facing applications, RIAs boost online conversions, increase customer satisfaction and retention, and simultaneously reduce customer support costs. For internal-facing applications, RIA technology helps companies migrate expensive client-server applications to Web architecture, reducing distribution and maintenance costs for legacy applications.

RIA technology is the "glue" that marries the reach of Web applications with the richness of desktop applications. RIAs "reach" because they run in a browser and don't require a software installation; although some RIA technologies require a browser plug-in like Flash, Silverlight or Java. RIAs are "rich" because they move user interface processing from the server to the Web client, while still maintaining the bulk of the data on the application server.

Several RIA technologies are commonly used today; each has specific strengths and weaknesses. The most widely used is Ajax, spearheaded by Google with leading edge applications like Google Maps. Alternative technologies include client-side Java, Flash and Microsoft Silverlight. All alternative technologies require plug-ins that must be installed by the end user. Further, these technologies use a proprietary runtime often limited to specific platforms instead of open Web standards.

Figure 1 compares these different technologies.

(5=Excellent; 4=Good; 3=Fair; 2=Mediocre; 1=Poor)

	Open Source Ajax	Commercial Ajax	Client-side Java	Flash	Silverlight
Web Standards Support	5	5	3	2	1
Vendor Support	1	5	2	5	5
Download Size	5	5	1	3	3
Zero Install - No Plug-in	Yes	Yes	No	No	No
Performance	1-3	5	3	5	5
Ease of Development	2-3	5	3	5	5
Security	3-4	4	3	3	2
Look-and-Feel	3	5	1	5	4
Maturity	2	4	5	4	2

Figure 1: Summary of different technologies strengths; (source: Backbase 2007)

Looking at the chart, it's easy to see where Client-side Java, Flash, and Silverlight stand. However, Ajax's score can vary. That's because Ajax features depend on which Ajax snippet, widget or framework you're looking at. Backbase research shows that mature Ajax Framework solutions from commercial vendors score better than open source JavaScript projects. So although Ajax is often the best technology for enterprise projects because it's based on open standards and requires no-plug-ins, enterprise developers need to be vigilant as to what solution to use.

What is Ajax?

Adaptive Path's Jesse James Garrett coined the term Ajax (Asynchronous JavaScript + XML) for a standards-based development model for Rich Internet Applications. Ajax differs in three important ways from the classic page-based Web application model:

- A client-side engine acts as intermediary between the user interface (UI) and the server
- The client-side engine handles user activity instead of sending page requests to the server
- XML data is transferred between the client-side engine and server; allowing partial page updates instead of complete page refreshes

Ajax solutions include a client-side engine that renders the user interface, communicating with the server in the background. Client-server communication can be asynchronous so the user interface is responsive at all times. This increases Web page interactivity, speed, functionality, and usability. Ajax runs in most browsers, on most operating systems, and is zero-install.

The most common Ajax misconception is that it's a completely new programming language. Ajax isn't a language. It's a technique for creating better, faster, and highly interactive Web applications using common Web technologies like HTML, CSS, JavaScript and XML. Because it uses native browser functionality, it doesn't require any type of plug-in. It uses the browser's XMLHttpRequest object, which allows server requests without a full-page refresh. Because Ajax is a browser technology, it can be used with any type of Web server software.

Because Ajax is a set of technologies, it's possible to develop Ajax applications from scratch without

using any specific Ajax development tools. However, many building blocks are currently available, promising to make Ajax development faster and more reliable. These building blocks typically fall into one of four categories:

- Snippets: small code fragments
- Widgets: self-contained user interface components
- Frameworks: a client-side runtime with utility functions and widgets
- Advanced Frameworks: a framework with advanced development tools and server-side components

Ajax solutions can be further classified. Some are open-source, some are commercial. Some are client-centric and some are server-centric. Some have a declarative (tag-based) API, while others are procedural. Finally, some perform a single function while others provide a comprehensive framework.

Ajax Applications

Ajax is ideal for applications with high user interaction. There are four main categories of Ajax applications:

“Ajaxification” of existing Web Applications: Many Web applications are still based on simple HTML pages. With Ajax, companies can significantly improve application usability by adding interactivity and responsiveness without rewriting existing applications.

Fat Client Migration: Many IT departments prefer to create and maintain only Web applications. Ajax can migrate fat clients to the Web, while maintaining the richness and speed of a desktop user interface. Ajax-based applications can replace 4GL applications developed with tools like PowerBuilder and Oracle Forms.

Building Rich Self Service Applications: As the Web becomes the primary delivery mechanism for many services, ease-of-use is a major selling point and opportunity for competitive differentiation. Rich, highly interactive and personalized interfaces enabled by Ajax are a proven way to increase conversion rates and improve customer satisfaction.

RIAs for Enterprise Mashup Applications: Ajax makes it simple to consolidate multiple systems into a single user interface — a “mashup.” Using a third party server-side integration system, Ajax can combine data from several sources in a coherent and intuitive user interface.

Ajax Advantages

Ajax’s features make it a compelling solution for enterprise RIA projects. Backbase’s research shows that businesses chose Ajax for several reasons:

1. Based on open standards
2. No need for plug-ins – zero install
3. Fits into normal code flow
4. Most developers already know some JavaScript
5. Many tools that reduce JavaScript coding
6. Rich browser-added functionality like drag & drop and slider
7. Increased application responsiveness over typical HTML

8. Web server agnostic
9. Works with all programming languages
10. Works on all Web browsers, on all platforms

Every organization should carefully evaluate the pros and cons of all available RIA technologies before starting a project. However, these benefits provide a strong case for using Ajax as the technology of choice.

Challenges to Implementing Ajax in the Enterprise

If Ajax has so many compelling benefits, why isn't it more widely adopted? There are some major obstacles faced by companies when they start using Ajax. One problem is the maturity of the technology they choose. Another is the absence of support and a body of established best practices. Backbase's research indicates that the top five problems hindering successful enterprise Ajax implementation are:

1. Unsupported Ajax projects, widgets, and toolkits
2. Lack of established Ajax best practices
3. Poor integration of Ajax in the normal development lifecycle
4. Lack of reliable external support and training
5. Risk of intellectual property violations

Unsupported Ajax projects, widgets and toolkits

There are many open source Ajax projects, but these solutions are fragmented and no software company is supporting them or committed to their future. These projects are developed differently, are incompatible with each other, and it's a safe bet that the vast majority of them won't exist two years from now. It's very difficult to make a safe choice here. Even if a software company is backing the project, the level of commitment is very modest. They typically don't provide business-grade support and training, and no guaranteed roadmap for ongoing development.

Lack of established Ajax best practices

Because Ajax is a fairly new technology, few people know the proven best practices for Ajax development. Without best practices, businesses often face expensive trial-and-error exercises, unnecessary project delays, downstream code integrity and maintenance issues, and sometimes security threats. Getting it right can waste a lot of money and time.

Poor Development Lifecycle integration

Most Ajax tools available today are no more than loosely organized JavaScripts. They have no tools for rapid application development, accelerated testing and debugging, or integrating Ajax into existing application development processes and tools. Further, using these free tools proliferates "spaghetti code:" an unstructured hodgepodge of JavaScript code that makes application testing and maintenance a nightmare.

Lack of reliable external product maintenance, product support and training

When technology isn't supported by a commercial business, businesses need alternatives for training and supporting their development environment. Some consulting companies offer support on open source projects, but it's not their core business and they typically deliver it as a "one-off." Without the economies of scale, support services become expensive and unsustainable, leaving clients "high and dry."

Risk of intellectual property violations

Many open source Ajax projects include code from several sources on the Internet. These code snippets are licensed under different licenses with different terms of use. There is no guarantee that the code doesn't violate patents. Developers are usually unaware of these risks; they simply use whatever code will speed up development. However, users of open source projects can be targets for patent infringement claims — especially as open source projects are hard to sue.

Given these sizable problems, it's understandable that enterprises might hesitate to implement Ajax. However, with market momentum driving IT departments to deliver RIAs to customers and internal clients, avoidance isn't an answer. Enterprises need a reliable partner, whose core business is ongoing Ajax innovation, code maintenance and product support. That partner is Backbase. And the solution is Backbase Ajax 360.

Backbase Ajax 360

Backbase Ajax 360 is a complete enterprise Ajax solution. It includes everything needed for efficient, risk-free browser-based RIA development and life cycle management.

With over five years of Ajax development experience, Backbase is the clear leader in the fragmented Ajax market. Fortune 500 organizations, leading ISVs, and tens of thousands Web developers rely on Backbase software. In the face of a market characterized by immature solutions, rapidly evolving standards, and a growing demand for RIAs, customers have asked the company to take a bigger role in maturing Ajax technology for broader adoption within the enterprise. Backbase's single focus is on Ajax. The company's leading position as a commercial Ajax vendor makes this a perfect fit between Backbase's goals and enterprise customer needs.

Ajax 360 is Backbase's comprehensive solution for ensuring successful Ajax implementations, especially within the enterprise. Numbers tell the story: Backbase software is today's most widely used enterprise Ajax Framework.

First, Backbase Ajax 360 delivers a complete set of development tools designed to significantly improve developer productivity. Second, the company adds comprehensive services on top of the Framework. Customers can count on Backbase for Ajax-based RIA architecture expertise, Ajax training, professional development services and enterprise premium support. Backbase also works closely with standards organizations and strategic technology vendors to make sure that enterprise customers realize maximum value from their RIA and Web 2.0 investments.

Open Standards

Backbase is committed to supporting the leading Web standards established by organizations like W3C and the OpenAjax Alliance. Backbase Enterprise Ajax Framework includes the entire DHTML stack: (X)HTML, CSS, JavaScript, DOM, XMLHttpRequest, etc. It also supports XPath, XMLEvents, SMIL, XInclude, XMLSchema, and XSLTransform. In addition, Backbase also supports Java standards such as JSF, Facelets, Struts, Spring MVC, JSR 168 and JSR 286. Unlike proprietary approaches, Backbase's standards-based solutions work with existing applications and technology; allowing companies to easily add RIAs to existing infrastructure. By leveraging existing investments and open standards, Backbase Ajax 360 reduces risks and accelerates development cycles.

Enterprise Ajax Framework

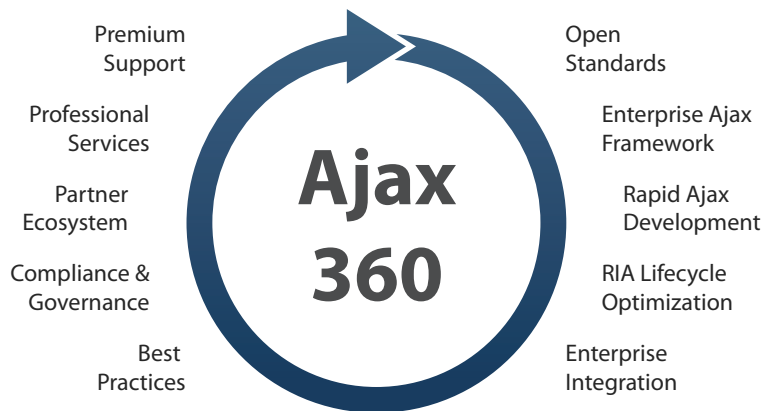
Backbase Ajax 360 supplies a comprehensive solution for creating rich user interfaces, it accelerates initial development and eliminates application maintenance burdens by keeping new code development to a minimum. The framework ensures widget interoperability, communication, and binding control to data sources. Backbase also takes care of all routine tasks and requirements, allowing

developers to focus on the unique aspects of an application, the business logic and UI composition.

Rapid Ajax Development

To increase developer productivity, Backbase Enterprise Ajax includes a comprehensive set of development tools. The system includes more than 250 pre-built and pre-tested Ajax Widgets and functions, sample applications, and IDE plug-ins for code completion and syntax highlighting. IDE plug-ins are also available for the Eclipse development platform and Adobe Dreamweaver. In addition, Backbase provides real time debugging functionality directly from within the Web browser.

Ajax 360 = Complete Enterprise Solution



RIA Lifecycle Optimization

An Ajax application is not developed in isolation: it must match business requirements and fit into the same application lifecycle as any other enterprise application. Backbase supports the entire application lifecycle — from initial idea development to maintenance several years after the application’s release. Code reuse, agile development methodologies, integrated testing (including user interface), and application guidelines speed up development and promote maintainable code. This approach lowers total cost of ownership (TCO) for RIAs by eliminating the fragmentation and poor coding practices found in today’s JavaScript development.

Enterprise Integration

Backbase Enterprise Ajax is designed to leverage existing IT investments across all server platforms. Backbase Ajax client technology is fully server agnostic as well. The software seamlessly integrates with common Web servers, application servers, and portal and SOA mashup servers. It is compatible with any server: Java EE, .NET, PHP, or ColdFusion. In addition to its client technology, Backbase provides additional pre-built connectors and/or runtimes for the Java server platform (e.g. Struts, JSF, Portal, Spring MVC).

Best Practices and Blueprints

A commitment to continuously advancing its body of implementation best practices is Backbase’s key to achieving Ajax practice leadership. Backbase collaborates with customers, partners and the Ajax community to solve real world business problems. By encapsulating best practices whenever possible directly into subsequent product releases, training materials and implementation guidelines, Backbase products and services help the Ajax community drive down development time, risk, and cost. Backbase consulting and training services have helped many customers to develop solid RIA prototypes that can be rapidly extended to production applications.

Compliance and Governance

Backbase is committed to supporting the leading industry standards and enforcing government regulations through its software. Unlike proprietary RIA technologies like Microsoft Silverlight and Adobe Flex, Backbase fully supports open industry standards and common browser technologies. Additionally, Backbase has made significant R&D investments to maximize the support for the Web Accessibility Initiative (WAI) as defined by W3C and required by Section 508 (USA).

With Backbase, customers govern their Ajax development using an object oriented programming model, a powerful inheritance model, and XML-namespaces. These features prevent unstructured and disorganized coding, and maximize code reuse and code maintainability. The framework dramatically simplifies both custom code maintenance and third party components. To protect its customers, Backbase offers a commercial license with full legal protection against patent infringement claims.

Partner Ecosystem

Backbase is dedicated to the success of Ajax in the enterprise and we work closely with customers and partners to deliver a best-of-breed RIA software solutions based on enterprise customer needs. To deliver ongoing value to customers, Backbase works closely with leading system integrators and “boutique” service providers to identify innovative applications of Ajax techniques. The company is committed to providing the largest number of integrations with software development and lifecycle management tools.

Professional Services

To ensure project success, Backbase customers can count on comprehensive mentoring, consulting services, and skills transfer. These services include tailored classroom training as well as on-site and Web-based courses. In addition, Backbase makes its Ajax development expertise available to customers for designing high-level Ajax application architecture. Professional services are also available to support customers and developers during all stages of development.

Premium Support

Backbase offers several technical support levels, from free online support to premium technical support with 24x7 availability: a premium technical support package with unlimited telephone or email support for one year, four authorized customer contacts, four-hour response time per telephone incident, and hot fixes to address urgent product issues.

Summary

With Ajax 360, Backbase is making Ajax ready for the enterprise. Ajax is the only open standards-based alternative in the world of RIA technologies, and Backbase is the only proven enterprise solution in the world of Ajax. Backbase uniquely increases developer productivity, shortens development cycles, decreases maintenance and integration costs, lowers cost of ownership, and delivers legal peace-of-mind. And it's no further than a phone call away.

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