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Management Update: Rich Internet Applications Are the Next Evolution of the Web

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Rich Internet application technologies combine the best of traditional graphical user interface applications with the wide reach of Web-based access. These solutions will help meet customer demand for a richer customer experience.

ANALYSIS

The User Interface

The graphical user interface (GUI) is the industry standard for virtually all modern distributed IT solutions. The traditional client/server GUI is routinely represented by event-driven “fat client” applications with bitmap addressable interfaces, static and sizable installations. These applications directly build on and have a high affinity with the features and functions of the native operating system.

The advent of the Web further evolved and extended the reach of the distributed computing model to the global Internet. The Web has introduced a new client user interface (UI) as well. The Web’s browser-based interface shares a common heritage with traditional GUIs, but it differs in important key areas because it typically places the bulk of business logic in the middle tier (the server). In typical implementations, the client elements of traditional browser-based applications are limited to the interface logic (for example, HTML) with small amounts of script code (such as JavaScript) for minor data validation and control logic. This creates a lightweight “thin client” that can easily be accessed from multiple platforms and devices and constrained network connections.

Immediate Access to Real-Time Information

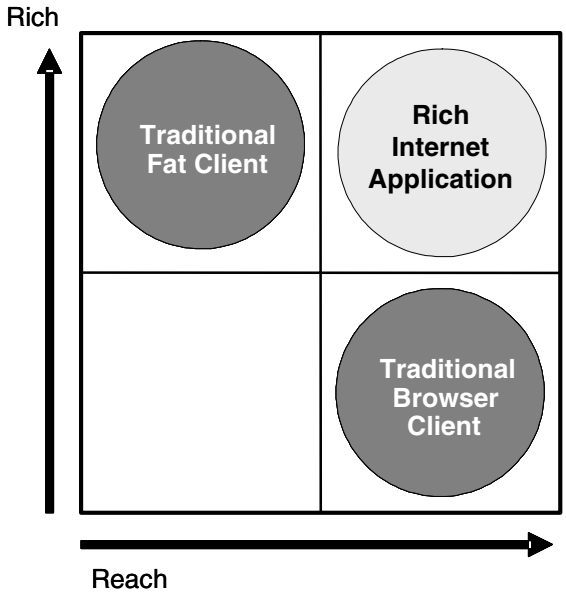
Modern business-to-business and business-to-consumer IT demands dictate the need for immediate access to real-time information and processes in a manner that has truly revolutionized business models across numerous markets. As developers build increasingly complex and mission-critical applications, some users require the richness of traditional GUI technologies. The increasing need for IT agility also dictates the reach of the browser-based on-demand access mode (for example, access to applications from multiple devices and platforms).

A gap exists between these two models where established technology fails to meet the demands of new business requirements. The traditional fat-client GUI, while supporting a rich user experience look and feel, lacks the ability to support consumer and on-demand corporate deployments. The traditional Web model has extraordinary reach, but lacks the rich user experience needed in many application categories ranging from business intelligence to customer relationship management to e-retail and more. A solution is required that benefits from the best of both of these worlds.

A New Application Model

A new application model is emerging that addresses the gap between the fat but rich client/server UI model and the thin but poor Web-based UI model (see Figure 1). The rich Internet application (RIA) addresses the best elements of both, and will enable the Web to evolve beyond the page-based, document-centric metaphor commonly associated with the browser approach.

Figure 1. The Rich Internet Application



Source: Gartner Research (May 2005)

An RIA provides the look, feel and full user experience of an event-driven GUI with the deployment and management functionality of the Web.

A New and Changing Technology

This technology is new and changing, and Gartner does not expect full mainstream maturity and adoption before 2008. However, a number of visionary vendors are delivering solutions that provide strong insight into the model that will — over time — significantly move the Web beyond what it is today. This new model will address usability and customer satisfaction factors for consumer Web sites. It will also address the productivity and performance of corporate line-of-business IT solutions. Furthermore, the RIA model will enhance and support the evolution of the "software as service" movement growing in numerous markets. By 2010, at least 60 percent of new application development projects will include RIA technology, and at least 25 percent of those will rely primarily on RIA (0.7 probability).

Return on Investment

Few best practices, and even fewer established standards, are in place for RIAs. Vendors and developers have addressed the RIA challenge using a myriad of approaches, none of which has yet to create a clear base of support. The technology has, however, evolved to the point where we can see value in first-mover early adoption in specific application categories (such as e-retailing, business intelligence or gaming). Although they do not yet support long-term strategic commitments, RIA solutions are now well-suited for tactical opportunities where return on investment can be achieved within 18 months.

Evolving RIA Features

Implementations of RIA technology differ significantly, but these approaches share a number of characteristics that define an RIA. These features will certainly evolve during the coming years. Applications will have to support this set of required features to qualify as an RIA. There are also

optional features the applications should support where lack of support will have an impact on competitive positioning. Finally, a set of nice-to-have features are not yet high priority, but they may become more important.

- RIAs must be “deployed” or accessed by the user without a separate installation process.
- RIAs must support robust local application processing on the client.
- RIAs must support an event-driven UI model that extends beyond the traditional page request/response HTML model.
- RIAs must support connectivity and synchronization with server-side middle-tier processing.
- RIAs must be usable in bandwidth-constrained network environments (such as dial-up).
- RIAs should provide a “high fidelity” UI that closely matches the look and feel of a native GUI (for example, support vector graphics).
- RIAs should operate efficiently within multiple Web browsers and on multiple operating systems.
- RIAs may run in stand-alone disconnected mode as well as connected.

Importance to Developers

For developers, RIAs offer a mechanism to take the traditional rich-client GUI model and support it on the infrastructure of the Web. RIAs are not dependent on service-oriented architectures (SOAs), but they fit well into the principles of a modern SOA. RIAs will provide robust user access channels into SOAs, offload some server-side processing, decrease network loads and provide occasionally connected application models for mobile and wireless devices. Most importantly, RIAs will do this without forcing a developer to write multiple application interfaces using widely divergent technologies — as is the case today between traditional GUI and basic HTML technologies.

A New Form of Rich-Client Application

RIA technology will provide a new form of rich-client application: there are several other models (for example, the Eclipse rich-client platform from IBM) as well. RIAs will provide a new option, but other models will continue to evolve. We expect multiple technology channels to continue for many applications; however, RIAs will reduce the number of channels needed by closing the technology gap between traditional fat-client GUI features and Web-based architectures.

Bottom Line

- Rich Internet application technology is emerging, but it is young.
- It has, however, matured to a point where vendors provide compelling toolsets for early adopters.
- The model will evolve considerably during the next three years, leading to mainstream adoption and critical mass among IT and commercial software projects by 2008.
- Type A (early technology adopters) companies should consider RIAs a source of competitive advantage today for certain application categories.

- More conservative adopters should not discount the role of RIAs, but should balance the risk vs. reward of the emerging model.
- The major risk is for vendors, due to the highly dynamic nature of the market and the number of competitors.
- To ensure maximum benefit from RIA, incorporate empirically based usability assessment into the development process.

Analytical sources: Mark Driver, Ray Valdes and Gene Phifer, Gartner Research

This research is part of a set of related research pieces. See "Inside Gartner Top View" for an overview.

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