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RIAs Bring People-Centered Design To Information Workplaces

by Erica Driver and Ron Rogowski

for Information & Knowledge Management Professionals

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This is the 16th document in the “Information Workplace” series.

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EXECUTIVE SUMMARY

Until recently, the primary options for delivering on the vision of Information Workplaces were enterprise portals or Microsoft Office. While those options remain suitable for many scenarios, rich Internet applications (RIAs) are emerging as vehicles to enable the next generation of Information Workplaces that are best suited for decision-makers and task-oriented workers who engage in complex, multistep processes — people who need seamless, individualized, and highly visual user experiences. Information and knowledge management (I&KM) professionals should analyze roles to decide if RIAs are appropriate, integrate data from existing applications into RIA-based Information Workplaces, and test rigorously to make sure that RIA-based Information Workplaces attain optimal results that will improve both employee and end customer experiences.

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Forrester interviewed 13 vendor companies for this report, including Adobe Systems, Backbase, Curl, Cynergy Systems, EffectiveUI, Esria, IBM, Laszlo Systems, Microsoft, Nexaweb Technologies, Oracle, Roundarch, and SAP.

Related Research Documents

[“The Seven Tenets Of The Information Workplace”](#)
November 26, 2007

[“Information Workplace Trends 2007”](#)
July 27, 2007

[“Rich Internet Applications: Not Just For Customers”](#)
March 1, 2007

[“Ajax Or Flex?: How To Select RIA Technologies”](#)
December 28, 2006

RIAs EMERGE TO DELIVER THE INFORMATION WORKPLACE OF THE FUTURE

I&KM professionals in a wide variety of industries are looking for ways to consolidate the tasks that information workers need to do every day to get their jobs done. A movement is under way in midsize and large enterprises to develop Information Workplaces (IWs) that are contextual, seamless, individualized, visual, multimodal, social, and quick.¹ Sixty percent of organizations we surveyed in February 2007 said that they are either in the process of developing, or have already documented, an Information Workplace strategy.² But a change is under way in how IT delivers Information Workplaces:

- **Today, enterprise portals and Microsoft Office are the most common front ends.** In most IW implementations we've seen, an enterprise portal, Microsoft Office, or a custom user interface on a kiosk is the container through which content, collaboration, enterprise applications, and other services are delivered to workers in a seamless, contextual way. In the IW case studies we published about IBM and Verizon, the enterprise portal is central to both companies' strategies.³
- **RIA technology is emerging to further improve the user experience.** Throughout Western culture, product companies have a renewed focus on design.⁴ This extends to software applications and, now, Information Workplaces that face the employee. Most of the RIA software specialists we interviewed for this report tell us that 40% to 60% of all of the companies that buy their products and services are building employee-facing apps or turbo-charging their enterprise portals with RIA technology.

Because RIAs improve the way people find and manipulate content, complete transactions, and consume multimedia content, these technologies are ideal for improving the user experience for information workers.⁵ Moving forward, RIA technologies like Adobe Flash and Flex, Adobe Integrated Runtime (AIR), Ajax, the Curl RIA Platform, Laszlo Systems OpenLaszlo and Webtop, Microsoft Silverlight, Nexaweb's Enterprise Web 2.0 Suite, Oracle WebCenter, and Sun JavaFX will be used to augment or even replace traditional enterprise portals and Microsoft Office as IW front ends.⁶

RIAs Offer Seamless, Individualized, And Visual User Experiences

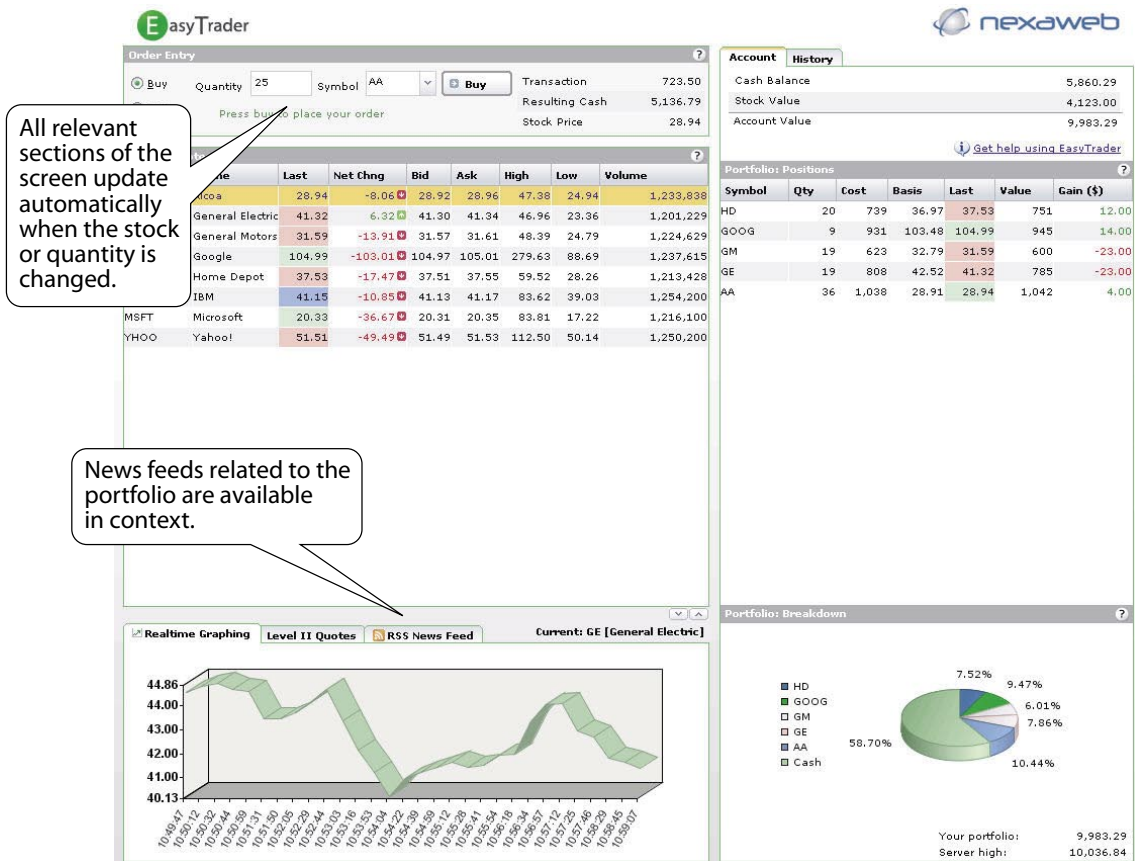
The seven tenets of the IW state that it is contextual, seamless, individualized, visual, multimodal, social, and quick. RIAs' primary contributions to the seven tenets are:

- **A seamless user experience.** With RIAs, people don't have to launch and use separate apps to complete their jobs. The tools, content, data, and applications they need are all available in a single container (see Figure 1). RIAs allow people to drag and drop data from one part of the display into another when needed and provide immediate feedback when a user action affects another part of the screen, even though the application may be accessing multiple different back-end systems. For example, Adobe Flex and Nexaweb's technology can hold a large amount

of data in memory, but surface only the necessary information on demand that can be shared among different applications. The Curl RIA Platform offers visualization of large, complex data sets as in the case of Panasonic's Voice of the Engineer customer support application, which makes data from multiple product and customer relationship management (CRM) databases available to support engineers in an integrated, on-demand view.

- **An individualized, digital work environment.** As designers create RIAs for use within the enterprise, they ask questions like: What is this person's role? What is his or her typical work day like? What is the first thing this person needs to know or do when he or she comes in at the start of the day? They designers dream up RIAs that are well suited to, or can adapt to, that individual worker. For example, a tech support person might get very good at supporting a particular software product. The application would conform to this by allowing him to contribute to a knowledgebase about that product.

Figure 1 An RIA For Traders Delivers A Seamless User Experience



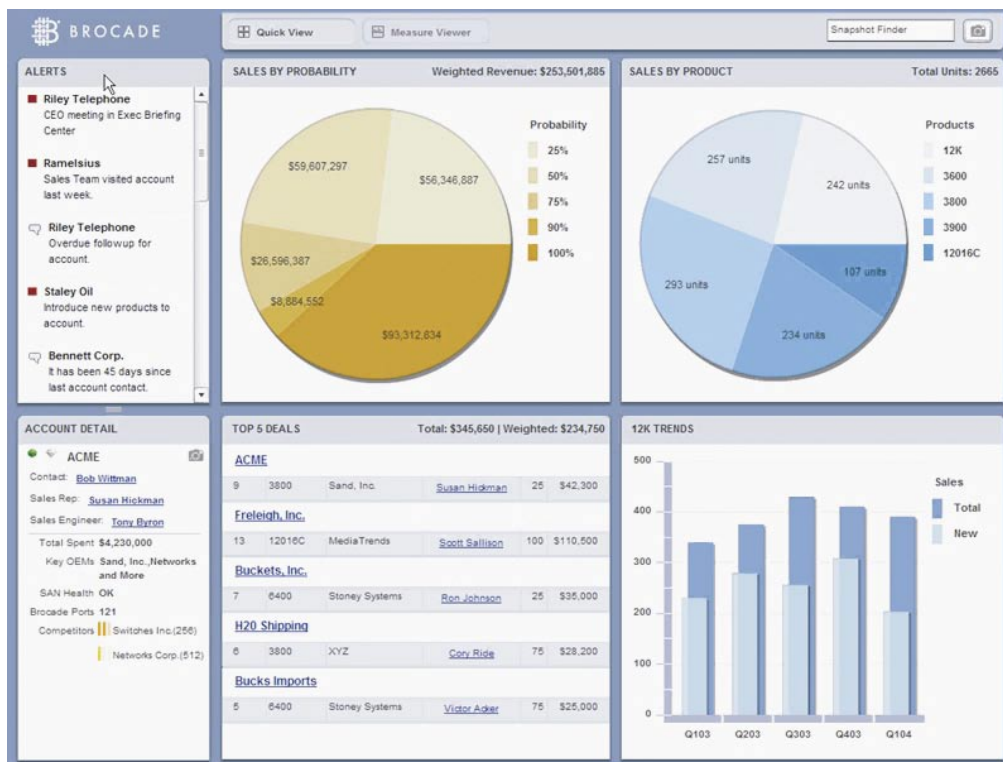
Source: Nexaweb Technologies

Source: Forrester Research, Inc.

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- **A means for visualizing data in new ways.** RIAs can enable dynamic graphical rendering of multiple data inputs that give a dashboard view of current status and also enable modeling of future scenarios. Roundarch, for example, created an RIA that does graphical rendering for the US Air Force. Traditionally, commanders would have to request status reports for things like aircraft in theater, maintenance schedules, and parts availability. Commanders would then put data into spreadsheets, create graphics, and paste the graphics into PowerPoint presentations. But the Air Force replaced that process with an RIA that combines key data from various data marts to allow personnel to effectively monitor an aircraft or fleet in a single view. Personnel can collaborate globally on complex data and charts through a rich user interface that presents meaningful, real-time information in an easy-to-understand manner. In another example, storage vendor Brocade created a consolidated, highly visual view of data in a dashboard format to improve its understanding of its sales performance (see Figure 2).

Figure 2 An RIA Gives Executives Visual Insight Into Sales Performance



Source: Adobe Systems

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Source: Forrester Research, Inc.

RIAs Address Some Of The Information Management Pro's Highest Priorities For IWs

These Information Workplace priorities include:⁷

- **Access to enterprise app data and functionality via alternative interfaces.** Mashups can be used to unify user interface logic to create an immersive experience in which all of the applications, tools, and information necessary for people to do their jobs are accessible within a single container. For example, Laszlo Systems offers a rich Internet app desktop in a browser called Webtop, which can be used to build and deliver role-based Information Workplaces where independently developed applications (e.g., enterprise apps) can work together to create a single view for the user. A different set of vendors offer mashup capabilities which can be used to deliver the data an individual user needs, including enterprise application data, in the context of that user's role and the business process with which the user is engaged — regardless of where the data lives.⁸
- **Workflow or BPM technology to automate business processes.** One of the best uses of RIAs in the enterprise is for streamlining complex, multistep processes. RIAs are particularly useful for business processes where multiple people have to work on the same type of request, such as processes that have enrichment steps or ad hoc collaboration within a structured process. In fact, some of the business process management (BPM) vendors are building new generations of their products using RIA programming techniques. For example, Adobe's LiveCycle BPM suite for document-centric processes includes many easy-to-use tools for quickly developing rich online or offline customer interactions in the context of business processes. One example is a wizard that creates Flash-based interfaces that guide users through filling out a form — which can then be downloaded or printed as a PDF complete with bar code.⁹
- **Information in the context of business processes and peoples' roles.** As long as designers and developers understand the high-level job categories (roles) that are relevant to the business process they are addressing, or that exist in the company as a whole, RIA technology can be used to deliver IWs that are truly role-based.¹⁰ This goes beyond having a few screens and buttons available to some people in certain roles and not available to others; it is a completely different user experience based on role. RIA provider EffectiveUI calls these "adaptive applications." For example, in an RIA for analyzing telecom expenses, an office manager who needs to assign new phones would have a completely different experience from the business analyst who analyzes phone records to optimize company expenditures — both use the same data, but the application adapts to the uses of that data, depending on who is using the application.

RIAs ARE WELL SUITED FOR TASK-ORIENTED WORKERS AND STRATEGIC DECISION-MAKERS

Information workers' requirements vary based on role. Some information workers live and breathe in Microsoft Office, so Office will be their front end. For others, an enterprise portal, kiosk on a shop floor, or custom handheld device might be the best fit. So when should you plan to include RIA

technologies in your Information Workplace strategy? When you are creating Information Workplaces for: 1) task-oriented workers who interact heavily with multiple transactional systems — people who are routinely involved in complex, multistep business processes, and 2) strategic decision-makers (see Figure 3 and see Figure 4).

Figure 3 Scenario: RIA-Enabled IW For Task-Oriented Workers Engaged In Complex Processes

Employee description	Examples	The old way	In an RIA-enabled Information Workplace
<ul style="list-style-type: none"> • Task-oriented, interacts heavily with multiple transactional systems to get the job done • Routinely engaged in complex, multi-step processes 	<ul style="list-style-type: none"> • Customer service/ call center • Contract managers • Teams that put together sales proposals • Sales reps who configure complex orders • Credit analysts 	<p>The job:</p> <ul style="list-style-type: none"> • Has to learn how to use multiple applications to get the job done; sometimes the applications have quirks. • Fills out lots of forms, sometimes electronic and sometimes paper • Tasked with entering information into forms quickly and correctly <p>The technology:</p> <ul style="list-style-type: none"> • Multiple thick clients on the desktop • Screens are poorly integrated • Users create their own context with lots of copy and paste <p>Implications:</p> <ul style="list-style-type: none"> • Poor customer experience (e.g., having to repeat the spelling of their name or describe their situation multiple times) • The inability to see critical pieces of customer information can lead to annoying handoffs. • Agents waste precious time answering customer queries when they have to go to multiple sources to cobble information together. • Every error or exception in a business process carries the cost required to fix it. 	<p>The job and technology:</p> <ul style="list-style-type: none"> • The context is the customer. Based on that, the IW presents a variety of information out of back-end systems. • All needed apps are unified within a single, role-based Information Workplace; call center manager and call center worker, for example, would have different experiences in the system. • Because RIAs can provide additional information in context, agents don't have to hunt around for related information. • Whole processes can be contained within a single screen to flow smoothly from end to end, in an immersive user experience. • Minimal clicks, minimal data entry • Auto completion — the system suggests values <p>Implications:</p> <ul style="list-style-type: none"> • RIAs can reduce the amount of time it takes to handle customer service calls because they can eliminate HTML page reload and refreshes that cause multisecond delays. • By eliminating costly delays, phone agents can provide faster responses to customers and shorten hold times. • Improved productivity if the worker can complete the process more quickly than before • Improved process quality if the worker can complete the process with fewer errors than before • Ultimately: improved customer experience because of faster, more accurate service

Figure 4 Scenario: RIA-Enabled IWs For Decision-Makers

Employee description	Examples	The old way	In an RIA-enabled Information Workplace
Decision-maker who creates insights, perhaps engages in strategic activities	<ul style="list-style-type: none"> • Managers • Executives • Strategists 	<p>The job:</p> <ul style="list-style-type: none"> • An event occurs: a call or email, the result of an enterprise search, or a work list generated out of an ERP system • Further context is required and additional actions needed (e.g., planning, collaborating, assembling resources) for the worker to be able to make a decision <p>The technology:</p> <ul style="list-style-type: none"> • The worker searches multiple systems for insights, runs reports, sends emails, and picks up the phone and calls others who might be in the know. • The worker exports data to Microsoft Excel, then copies charts to Microsoft PowerPoint. <p>Implications:</p> <ul style="list-style-type: none"> • Missed opportunities • Lost insights • Wasted time • Incorrect assumptions lead to poor business decisions • Strategic disadvantage 	<p>The job and technology:</p> <ul style="list-style-type: none"> • A dashboard-style interface • Complex data visualization and business intelligence in an easy-to-digest, personalized way • The worker can interact with the information in the dashboard, which comes from multiple back-end systems. • Enable analytical or visual apps like business intelligence, network monitoring, charting, mapping, and scheduling (e.g., resource, inventory, process) • Ability to dive in and out of detailed content and combine data from various data sources <p>Implications:</p> <ul style="list-style-type: none"> • Better visibility into business processes and ability to optimize • Improved productivity as a result of better reporting • Better decision-making

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Source: Forrester Research, Inc.

RECOMMENDATIONS

I&KM PROS: FIND THE SWEET SPOT FOR RIA-ENABLED INFORMATION WORKPLACES

RIAs can help transform Information Workplaces into high-powered, comprehensive work environments. To get the most out of IW initiatives and RIA technologies, I&KM pros should:

- **Conduct a role analysis to determine if RIAs would benefit segments of the workforce.** RIAs are particularly powerful when they enable multiple applications to be used together in a seamless way. To determine if RIAs will help take their Information Workplaces to the next level, project teams should take a hard look at how workers in the organization conduct daily business, call out inefficiencies, and then look at how RIA technologies can help streamline the use of multiple applications or provide management visibility into process they couldn't easily get through other means.
- **Integrate what already exists when it makes sense.** Workers already use a number of messaging, collaboration, and Social Computing tools in their daily lives. They also use a mix of applications that may not need to be scrapped. Instead of trying to recreate all of these applications, look for ways to combine existing data sources into RIA-enabled Information Workplaces. Because these are the early days of RIAs in the enterprise, most RIA platforms do not yet provide out-of-the-box interfaces to popular business collaboration tools — but they will.
- **Test, measure, and modify the RIA experience.**¹¹ RIAs don't provide a lot of benefit if people can't figure out how to use them.¹² To get the most out of an RIA investment, test the application with the people who are actually going to use it during design and development, and track usage to determine areas for more comprehensive testing. Once a potential problem area is discovered, conduct expert reviews to pinpoint well-known usability problems, and run usability tests to find application-specific issues.
- **Design your Information Workplaces' visual capabilities by tapping Millennials.** Ask yourself which aspects of your Information Workplace could benefit from a more graphical and/or multimedia display. Start with the obvious, such as roles, geography, client types, and work process, and then look deeper at the information relationships, collaboration, and workflows to see where other visual structures can emerge. Discuss this with your business sponsors and your vendors to foster interest and investment; then sit down with Millennials to map out some innovative approaches.

WHAT IT MEANS

RIA-ENABLED IWs WILL IMPROVE THE EMPLOYEE — AND CUSTOMER — EXPERIENCE

RIAs will increasingly be used to deliver Information Workplaces. While RIA technologies aren't pervasive within enterprises today, adoption will increase as I&KM pros recognize the technologies' value in creating IWs that are seamless, individualized, and visual.¹³ I&KM pros are working with CIOs, enterprise architects, designers and developers, and IT service owners to develop Information Workplace strategies to address burning business issues like:

- **Improving internal efficiencies that improve the end customer experience.** By applying interaction design best practices, designers and developers can create Information Workplaces that bridge multiple business processes and information assets. The more business processes the organization is able to complete quickly and correctly, the more quickly and correctly it will be able to respond to customers. If internal processes run smoothly, there will likely be fewer angry calls — or even fewer inquiries — from customers, thereby driving down the costs of doing business.
- **Engaging next-generation, technology-savvy workers.** Better Information Workplaces don't just make customers happier, they improve the quality of work life for employees because processes are simplified and people aren't doing pointless, redundant work. Plus, when service employees are better equipped to provide accurate answers to client queries, quickly turn around completed loan applications, or process an insurance claim in a timely fashion, it reduces the stress that irate customers can create. All of this leads to a better work environment where it's possible to retain top talent.

SUPPLEMENTAL MATERIAL

Companies Interviewed For This Document

Adobe Systems	Laszlo Systems
Backbase	Microsoft
Curl	Nexaweb Technologies
Cynergy Systems	Oracle
EffectiveUI	Roundarch
Esria	SAP
IBM	

ENDNOTES

- ¹ Not only is the Information Workplace role-based, contextual and guided, seamless, visual, and multimodal, as Forrester described in early reports on this topic; but with the rapid advancement of enterprise Web 2.0, “role-based” has evolved to “individualized,” and the Information Workplace gains two new facets: social and quick. See the November 26, 2007, “[The Seven Tenets Of The Information Workplace](#)” report.
- ² Fourteen percent of the IT decision-makers we surveyed in Forrester’s February 2007 US And UK Information Workplace Online Survey said that their organizations have already documented IW strategies; another 44% are in the process. See the July 27, 2007, “[Information Workplace Trends 2007](#)” report.
- ³ IBM’s IW strategy centers on role-based portals, and Verizon’s IW is based on a rich, highly functional enterprise portal, speech portal, right-time communications platform, and a scrolling executive dashboard. See the October 3, 2006, “[The Information Workplace Becomes A Reality Inside IBM](#)” report and see the September 14, 2005, “[Verizon’s Information Workplace](#)” report.
- ⁴ For some great examples of a renewed focus on design as a way to attract and retain customers, and improve the quality of life, look at the Apple iPhone, Starbucks Coffee, the Herman Miller Aeron chair, and the Nintendo Wii.
- ⁵ Broadband proliferation, consumer demand, and enabling technologies are driving increased use of rich Internet applications, providing benefits for users and companies that static, HTML sites can’t. See the September 1, 2006, “[Rich Internet Applications: Why And How](#)” report.
- ⁶ The usability benefits RIAs offer can also have a major impact on the experience employees have with internal applications — and their productivity. To get the most from their workforces, firms should design employee-facing tools based on an understanding of target users and their goals, test current apps for usability problems, and look for opportunities to leverage RIAs’ specific capabilities to improve usability. See the March 1, 2007, “[Rich Internet Applications: Not Just For Customers](#)” report.
- ⁷ In Forrester’s February 2007 US And UK Information Workplace Online Survey we asked, “What are your organization’s highest priorities for Information Workplaces?” Eighty-four percent of the respondents said that dynamic content and collaboration based on role was at least somewhat important, while 84% said the same about workflow and BPM to automate business processes and about enterprise application access via a portal or office productivity tool. Eighty-three percent of respondents said that content in the context of business processes was at least somewhat important, and 81% said the same about collaboration in the context of business processes. See the July 27, 2007, “[Information Workplace Trends 2007](#)” report.
- ⁸ Vendors offering mashup-makers include IBM, JackBe, Nexaweb Technologies, OpenSpan, and StrikeIron.
- ⁹ Adobe’s vision is to provide the best tools for building improved customer experiences leveraging BPM, PDE, forms, and rich user interfaces — no matter how the customer chooses to interact. Adobe’s vision of linking the customer experience and rich content tools to a full BPM capability is a clear winner. See the July 9, 2007, “[Adobe Wows Customers In Document-Centric BPMS Processes](#)” report.
- ¹⁰ The degree to which an RIA is role-based depends on: whether IT understands the job roles that exist within the company, how well understood the needs are of people in various roles, and how well the enterprise directory(ies) supports roles (assuming that the RIA is integrated with the enterprise directory).

- ¹¹ Organizations can best understand RIA effectiveness and performance by: 1) using the full portfolio of tools to evaluate RIAs, especially qualitative tools that can be applied early in the process, and 2) building a solid plan for RIA measurement with measurement best practices like giving stakeholders time to define data needs, capturing metrics requirements alongside functional requirements, and describing what action people are going to take based on the data before it's collected. See the February 7, 2007, "[Measuring Rich Internet Applications](#)" report.
- ¹² Rich Internet applications (RIAs) promise improved experiences for users, and in turn, bolstered bottom lines for companies. But RIAs are newer and more complex than their HTML counterparts, making them vulnerable to well-known — and potentially undiscovered — usability flaws. To ensure that RIAs don't frustrate users with avoidable problems, designers should look out for some basic pitfalls and test their applications — in the context of the full site experience — throughout the design and implementation phases of an RIA development project. See the June 7, 2006, "[Rich Internet Application Usability 101](#)" report.
- ¹³ In Forrester's Business Technographics® September 2006 North American And European Enterprise Software Survey, we found that 1% of enterprise respondents said their organization is using Ajax and another 1% said their organization is using Adobe Flash or Flex for custom-developed applications. See the February 22, 2007, "[The State Of Application Development In Enterprises And SMBs](#)" report.

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