The Hybrid² Integration Challenge
by Stefan Ried, Ph.D., May 1, 2013

KEY TAKEAWAYS

Digital Business Design Is Too Challenging For Today's Integration Tools
Forrester recently introduced a new design model for enterprise integration --
digital business design. However, this new imperative tests the limits of today's
integration tools and demands a new level of integration among different
integration silos.

Established Integration Tools Are Mature, But Their Federation Remains Problematic
The cost of licenses and the operation of integration tools aren't the only drivers of the
total cost of ownership of integration scenarios across an actual enterprise application
landscape; the consistent propagation of changes and metadata management can
comece significant costs if the tools used don't support these well enough.

Hybrid Integration Is The Federation Of On-Premises And Cloud-Based Integration
Forrester sees two key challenges in orchestrating an integration landscape: 1) the
interoperability of different integration technologies; 2) the consistent federation of on-
premises integration technologies with a cloud-based integration approach. Hybrid
integration is our term for this federation of different integration silos and topologies.
The Hybrid² Integration Challenge
CIOs Are Juggling Heterogeneous Integration Silos And Cloud Apps
by Stefan Ried, Ph.D.
with Pascal Matzke, Randy Heffner, Enza Iannopollo, and Joanna Clark

WHY READ THIS REPORT
As current application environments get more complex and heterogeneous, the respective data and application logic is spread across a multitude of different environments — both on premises and in the cloud. As a result, maintaining the consistency of business logic and data structures is becoming one key differentiator for integration products. This report introduces Forrester's concept of hybrid² integration, in which federated on-premises and cloud-based integration helps improve the interoperability of existing and new silos of application, B2B, and data integration. Enterprises that are rapidly expanding their use of SaaS applications and cloud infrastructures and looking to tackle the multidimensional complexity of integration should familiarize themselves with hybrid² integration.

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Forrester's Forrsights Software Survey, Q4 2012 was fielded to 2,444 IT executives and technology decision-makers located in Canada, France, Germany, the UK, and the US from small and medium-size business (SMB) and enterprise companies.

Related Research Documents
Digital Business Design Is The New Integration
November 8, 2012
Business Networks Will Push The Cloud Beyond IT
October 18, 2012
The Forrester Wave™: SOA Service Life-Cycle Management, Q1 2012
January 6, 2012
HYBRID APPLICATION ENVIRONMENTS HAVE BECOME THE NORM

Hybrid enterprise IT landscapes have become the norm. Data and application logic is spread across different packaged and custom-built applications on premises, on managed infrastructures, and in the public cloud. While this presents a massive integration challenge today, the situation will only get more complex as some of the following key trends evolve further.

SaaS Complements Existing On-Premises Applications

Many IT decision-makers underestimated the significance of software-as-a-service (SaaS) for far too long, regarding it as a niche phenomenon occurring at a departmental level. But SaaS is definitely more than that, as our Forrsights Software Survey, Q4 2012 shows: By the end of 2013, enterprises will use an average of 9.6 SaaS applications. At the same time, the usage of SaaS will — or partly does already — coexist with traditional enterprise computing, just as client/server computing did with mainframe computing 20 years ago. And our data shows us that enterprise adoption of SaaS will become (see Figure 1-1):

- **Broader.** The first wave of SaaS implementations saw companies focusing on applications for customer relationship management (CRM), human capital management (HCM), document collaboration, learning software, and similar systems of engagement. These SaaS applications are now mature; the second and third wave of SaaS adoption will include more back-office and “systems of record” types of applications — down to financial accounting. As SaaS becomes more mainstream, it will cause another raft of integration technologies at the departmental level.

- **Hybrid.** Our recent Forrsights Software Survey, Q4 2012 clearly shows that companies are deploying SaaS applications not to replace but to complement their existing on-premises software: Only 18% of the enterprises that were first-wave adopters and less than 9% of the second-wave adopters have used SaaS as a full replacement. Going forward, using SaaS applications to complement existing on-premises functionality will become the norm; fully replacing on-premises applications will remain the exception.

New Systems Of Engagement Need To Integrate With Traditional Systems Of Records

As we’ve outlined in previous research, companies are about to make a major shift away from spending on large, mainly horizontal “systems of record” toward focusing on new “systems of engagement.” While traditional systems of record — like core enterprise resource planning (ERP) systems, finance and control systems, and HCM systems — focus on processes and departmental transactions, systems of engagement focus on interactions with people, such as employees, partners, or customers. Companies are investing in new systems of engagement, such as talent management or customer interaction, as a way to innovate and grow. Meanwhile, systems of record like financial accounting applications are becoming increasingly rationalized and streamlined. At the same time, IT organizations face the challenge of integrating the new systems of engagement, which are typically
run as SaaS applications, with systems of record, which are run in departmental silos. Managing this integration will be critical if companies are to achieve their growth and innovation targets.

**Individual Business Logic Is Spread Across Cloud And On-Premises Systems**

In many enterprises, custom-made business logic is either coded in programming languages like Java or .NET or modeled in business process management (BPM) or business rules management (BRM) tools. The result of both approaches is often exposed to business users via an application portal or a composite application. Our survey data shows that only a minority of enterprises plan to replace or have already fully replaced Java and .Net runtime platforms or BPM and BRM with cloud platforms. Mainstream cloud adoption once again involves a hybrid scenario, where additional cloud platforms complement existing development platforms (see Figure 1-2). For example, one manufacturing company receives requests for quotation via a cloud-based application and answers these requests with a traditional on-premises product life-cycle management (PLM)/ERP system; the decision to offer discounts might be supported by an analytics application provided from the cloud but will seamlessly appear in the user interface of the ERP system. The boundaries between cloud and on-premises applications will increasingly blur — in the end becoming totally invisible to many business users. Our data reflects this, with 24% of enterprises already combining business steps located in the cloud and on premises (see Figure 1-3).

**Shorter SaaS Release Cycles Drive Faster On-Premises Integration**

One direct consequence of the hybrid cloud application landscape and the related hybrid integration landscape is the accelerated speed of change. While traditional application landscapes move relatively carefully from one ERP version to the next, with CIOs having full control over deployment schedules, this control simply disappears in the cloud. Major SaaS applications offer a reaction period of just a few weeks; changes move into production automatically after this time. Fortunately, most changes to modern SaaS applications don't break existing application program interfaces (APIs), but they constantly extend both APIs and data models related to new, user-exposed functionality. This release strategy means that business users expect to be able to rapidly leverage these improvements in the connected enterprise applications. The bottom line: The new world of hybrid enterprise clouds means a simultaneous double challenge of increased complexity and accelerated speed of change.
Figure 1 Hybrid Cloud Usage Has Become The Norm

1-1 Hybrid SaaS usage characterizes the future SaaS adoption

“What are your firm’s plans to use software-as-a-service (SaaS) to complement or replace the following applications?”

<table>
<thead>
<tr>
<th>Wave</th>
<th>Systems of engagement/ front-office software*</th>
<th>Industry-specific software†</th>
<th>Systems of record/ back-office software‡</th>
</tr>
</thead>
<tbody>
<tr>
<td>First wave</td>
<td>18%</td>
<td>8%</td>
<td>7%</td>
</tr>
<tr>
<td>Second wave</td>
<td></td>
<td>21%</td>
<td>12%</td>
</tr>
<tr>
<td>Third wave</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Base: 451 to 1,220 software decision-makers at firms with 20+ employees who currently use or are planning to use each application

*Weighted average of the following SaaS categories: CRM, HCM, collaboration management, learning management
†This includes all software that supports industry-specific processes.
‡Weighted average of the following SaaS categories: BPM, SCM, PPM, ePurchasing, content management, ERP, F&A, EAM, BI, PLM, order management

1-2 Hybrid landscapes become the norm for custom enterprise apps and business process integration

“Which of the following middleware platforms are you planning to replace or complement with cloud middleware platforms (PaaS)?”

<table>
<thead>
<tr>
<th>Middleware Platform</th>
<th>Already replaced most/all with PaaS</th>
<th>Plan to replace most/all with PaaS within two years</th>
<th>Using some PaaS to complement</th>
<th>Plan to complement with some PaaS within two years</th>
</tr>
</thead>
<tbody>
<tr>
<td>User interface frameworks ports and composite app environments</td>
<td>5%</td>
<td>3%</td>
<td>9%</td>
<td>15%</td>
</tr>
<tr>
<td>Service-oriented architecture (SOA) integration and messaging infrastructure</td>
<td>5%</td>
<td>3%</td>
<td>6%</td>
<td>15%</td>
</tr>
<tr>
<td>Business process or business rule management solutions</td>
<td>3%</td>
<td>2%</td>
<td>7%</td>
<td>15%</td>
</tr>
<tr>
<td>Custom-developed apps in .NET and Java</td>
<td>3%</td>
<td>6%</td>
<td>12%</td>
<td>15%</td>
</tr>
<tr>
<td>Business event management</td>
<td>4%</td>
<td>2%</td>
<td>6%</td>
<td>9%</td>
</tr>
</tbody>
</table>

Base: 868 infrastructure and platform decision-makers at firms with 20+ employees

Source: Forrsights Software Survey, Q4 2012

Source: Forrester Research, Inc.
**Figure 1** Hybrid Cloud Usage Has Become The Norm (Cont.)

1. More than one in three enterprises plans to deploy apps in hybrid environments

   “How do you currently implement (or plan to implement) your business processes between on-premises and/or cloud applications?”

   - We keep business processes clearly either as on-premises or in the cloud: 57%
   - We combine business steps located in the cloud and on premises into one process: 24%
   - Combine multiple cloud applications into a multcloud business process: 10%
   - Don’t know: 8%

   Base: 1,631 software decision-makers (percentages do not total 100 because of rounding)

   Source: Forrsights Software Survey, Q4 2012

**DIGITAL BUSINESS DESIGN BECOMES A DIFFICULT MISSION**

In a recent report, we argued that it is time for a new kind of integration design — a new way to approach the tools, infrastructure, design models, processes, and governance practices that an organization uses to connect all of its application and technology silos into a coherent whole. We introduced the concept of digital business design — a model for enterprise integration that takes into account the various siloed landscapes, both on premises and in the cloud. However, in order to get to the desired state, companies need to overcome a number of different obstacles.

**Organizational Silos And Political Power Play Prohibit Holistic Integration**

Development teams are driven by quick wins on a project-by-project basis, so they constantly question the efforts related to enterprise architecture principles, such as canonical data models or unified service repositories. Even if the CIO office can prove the financial benefits of a unified and governed enterprise integration strategy, the compelling communication of these benefits is a challenge. The simple reason for this is the fact that each family of tools is used by different groups of people within the enterprise (see Figure 2). Unfortunately, these different groups of people are so scattered across the different teams that they see very few benefits in working together or following the CIO's guidelines. Their focus on the different current and future silos of integration technologies
on the one hand and on either on-premises integration or cloud-based integration scenarios on the other leads to the fragmentation of enterprise integration today.

■ **CIOs face a choice of acting as the police or going to jail.** CIOs typically face a choice: They either rigorously enforce compliance with enterprise architecture principles for all groups of developers, administrators, and tech-savvy businesspeople or they let everybody integrate what and how they want. While businesspeople might prefer the latter, this will usually cause issues around data governance, reuse of web services or data mappings, and, more importantly, legal compliance around data security. A CIO that is found guilty of such behavior could end up in jail. But going to the other extreme of total enforcement of corporate compliance won’t work with most tech-savvy businesspeople; they will likely ignore it, using cloud-based integration tools like Boomi and Informatica Cloud that they can technically run without the permission of the CIO.

■ **Siloed purchasing behavior further undermines the power of the CIO.** Many CIOs favor comprehensive integration solutions (CISes), which offer closer integration of multiple integration tools in one suite, but these result in overwhelming complexity for the various discrete groups of users. Individual user groups often purchase integration tools that really focus on a specific task or project. The CIO is often left out of the picture and unable to frame a consistent underlying integration strategy that uses CISes instead of discrete tools. As a result, companies miss out on the opportunity that CIS products can provide. In many instances, political power plays between the various stakeholders become the greatest inhibitor to achieving the desired benefits.

**The Current Integration Tool Landscape Is Too Heterogeneous**

The existing integration tool landscape in most large enterprises is simply too varied and disparate to support full implementation of a digital business design strategy. Forrester’s Forrsights Software Survey, Q4 2012 shows that 34% of enterprises use a minimum of three major middleware vendors, while another 27% use at least two vendors for their middleware. By comparison, only 38% of the enterprises we surveyed had managed to consolidate all of their middleware into a single vendor offering. In reality, many enterprises source application integration tools from vendors like Software AG or Tibco Software, business process management integration tools from BPM-focused vendors like Pegasystems, and data integration tools from data-focused vendors like Informatica.
**HYBRID² INTEGRATION ENABLES A BIG-PICTURE PERSPECTIVE AND APPROACH**

To implement digital business design with a reasonable cost of ownership, the interoperability between different integration tools needs to take a quantum leap forward. Forward-thinking CIOs are already challenging vendors to deliver a new level of interoperability between different integration tools. If vendors don't significantly improve their tools, CIOs and enterprise architects will get lost in the integration weeds rather than driving the industrialization of their integration landscape and maintaining a holistic view of integration.

Forrester believes that to tackle this multidimensional problem of the lack of interoperability between integration tools, we need a new generation of integration tools that follow the concept of hybrid² integration, which we define as (see Figure 3):
The concept of federated on-premises and cloud-based integration combined with the improved interoperability of existing and new middleware silos of application, B2B, BPM, business events, business rules, and data integration. Key capabilities of hybrid² integration platforms include metadata life-cycle management and runtime interoperability, which help CIOs orchestrate a well-governed but also rapidly changing agile integration platform from multiple integration products.

Forrester doesn’t see hybrid² integration as a simple product category or technology. Enterprises and vendors failed with their service-oriented-architecture (SOA) implementations if they didn’t properly understand SOA as an architectural paradigm and corresponding product capabilities. The same applies to hybrid² integration. Modern integration products that embrace the hybrid² integration concept are designed for interoperability with other integration silos. Advanced interoperability would significantly help organizations implement Forrester’s digital business design paradigm.
Hybrid² Integration Tools Focus On Cross-Product Interoperability

Conversations with Forrester clients reveal that during the past two years, interoperability between different integration tools from multiple vendors has become as important as the option to use preintegrated tools from a single vendor. However, only the larger integration vendors have the resources to ensure really close suite integration while following open standards. And only these
approaches enable enterprise architects to integrate multiple integration vendors into consistent, automated, and hybrid integration landscapes. At the same time, having modern integration products that support this kind of integration with each other is one of the cornerstones for success.

Traditional product categories, such as enterprise service bus (ESB), B2B gateway, extract, transform, load (ETL), and BPM tools, are very mature and remain important products in their own right. The Forrester Waves that we’ve published for ESB, CIS, B2B, and ETL integration are therefore still valid.9 Hybrid² integration describes tools and offerings that focus on interoperability across multiple integration products; as such, it complements these existing product categories. Here is a list of the evaluation criteria that we will use to evaluate hybrid² integration offerings in our forthcoming Forrester Wave:

- **Support of canonical data models.** A simple example of a canonical data model is a company’s standard definition of a customer record schema. This is equally important to a Java developer working with an enterprise service bus (ESB), a database administrator working with ETL tools, an eCommerce manager working on EDI communication with external business partners, and tech-savvy businesspeople using cloud-based integration to connect SaaS subscriptions into the existing on-premises enterprise applications. New-generation tools should support the collaborative design, life cycle, accessibility, and enforcement of canonical data models.

- **Support of consistent metadata life-cycle management.** Similar to the support of canonical data models but more general is metadata life-cycle management. Consider, for example, an EDI purchase order message coming in via a B2B gateway: The message is validated and passed to an ESB; the ESB implements some basic business logic, such as the availability check for the requested product, passes the order to a fulfillment system, and notifies a SaaS CRM system about the order-processing stages. Some industries tend to customize EDI messages frequently and add new fields. In our example, we would look at how the tools propagate the adoption of an additional field into all the connected applications. First, this implies that you have proper versioning for all the assets of your digital business design. At a more detailed level, we include the resolution of dependencies, automated alerting of affected developers, and even code generation for web services description languages (WSDLs), test stubs, service facades, and similar in this group of criteria. Our Forrester Wave assessment of SOA service life-cycle management in Q1 2012 addressed many life-cycle management challenges around application integration.10 However, consistent metadata life-cycle management in the future needs to bridge the worlds of data and application integration.

- **Support of open standards or proprietary integration to achieve suite integration.** Some vendors might achieve impressive interoperability across their own integration products based on a closed approach. This will have some value for the 38% of enterprises that mainly source their integration technology from a single vendor. However, open-standards-based approaches that enable CIOs and enterprise architects to assemble their own mixed vendor integration “suites”
are equally important. Detailed evaluation criteria for suite integration include the consistent modeling of business processes or data integration scenarios by business analysts — down to the execution in the preferred runtime environment. A unified user and developer experience across multiple tools also contributes to the suite experience.

- **The stimulation of an ecosystem of integration products.** Enterprise customers don’t find formal statements of interoperability with other vendors’ products to be particularly credible without concrete proof points. Examples are the certification of other products, publicly available test suites, or interoperability labs where vendors can work on interoperability and customers can actually see different products interacting. Our hybrid² integration criteria evaluate the momentum for a detailed ecosystem — from the simple accessibility of an interoperability lab to the vendor’s engagement with standards bodies or communities.

- **Support of runtime interoperability.** Take a business process model in business process modeling notation (BPMN) or service orchestration done in business process execution language (BPEL) as an example: These standards imply portability and reuse across multiple vendors. But does it actually work if you model a services sequence in BPEL on one vendor’s ESB and run it on multiple other ESBs that you might already have on premises or in the cloud? We will evaluate the vendor’s commitment to meet this type of enterprise demand based on standards compliance, contribution to the further development of relevant standards, and tools to translate between standards, such as to and from BPMN.

- **Cloud-based integration and integration to the cloud.** This is the area where Forrester sees most innovation at the moment. We consider integration in the cloud and integration with the cloud as separate criteria. The latter can simply be a set of preconfigured and packaged integration patterns like Software AG’s recently announced webMethods CloudStreams, which enable an on-premises ESB to talk to SaaS applications or custom-made applications on infrastructure-as-a-service (IaaS). Integration in the cloud is more challenging. This is not about the ability to run the same ESB on an IaaS provider; it is about significantly more. Cloud-based integration hubs such as MuleSoft’s CloudHub offer a fully managed multitenant platform-as-a-service (PaaS) to develop, test, and run general purpose business around complex integration scenarios in the cloud.

- **Maturity within the original integration category.** This pertains to possible new products and vendors that try to address the hybrid² integration market with broad, less detailed functionality. While there are some totally new vendors in the area of cloud-based integration, such as Boomi, satisfying enterprise users in established integration categories such as ESB or ETL will be hard for new vendors. It’s therefore likely that vendors delivering outstanding hybrid² integration capabilities will emerge from the leaders in existing categories or will partner closely with them.
Clever Vendors Will Innovate Around Hybrid² Integration Needs

Most established middleware vendors closely and continuously follow the demand from their largest customers. As on-premises integration is still characterized by traditionally shipped and licensed software products, vendor reaction to client demand involves annual (or even slower) release cycles. However, cloud-based integration vendors like Boomi and integration-centric PaaS providers such as MuleSoft with its CloudHub are innovating rapidly and proactively. To stay on top of this market, middleware vendors will most likely:

- **Proactively innovate around hybrid² integration capabilities.** Forrester believes that enterprise architecture trends such as digital business design and the ongoing adoption of cloud computing are clear indications that enterprises will fundamentally reshape the way they evaluate integration tools.

- **Extend their go-to-market strategy to CIOs and enterprise architects at the corporate level.** Once an enterprise has been hit by the integration tsunami and finds it itself unable to make any changes at all, power returns to the CIO, who will be expected to fix the problem. This shifting buying power requires the adoption of a go-to-market strategy that addresses corporate buyers more than single teams in the enterprise.

- **Blur the lines between data integration and application integration.** Integration vendors’ strength and legacy tends to fall either on the application integration side (mainly with ESBs) or on the data integration side (originally around ETL). Nevertheless, customers will look more at use cases rather than at established category definitions, especially in the cloud. Many customers start with simple data integration tasks — for example, synchronizing their salesforce.com account with on-premises ERP systems; shortly after using a data integration tool, however, they will start to demand more sophisticated application integration involving hybrid scenarios.

- **Offer a cloud-based integration service, not just integration to the cloud.** Many SaaS applications are still subscribed to by line-of-business managers, who intentionally bypass the CIO’s office. When this generation of cloud buyers looks at integration scenarios shortly after their initial purchase of the SaaS application, their first choice is, once again, a fully managed cloud-based offering. Strategically thinking vendors like Informatica let an innovative cloud service run in incubator mode for some years but bridge the interoperability gap to the on-premises application as well. The result is one consistent metadata set.
RECOMMENDATIONS

CIOs Need To Avoid The Integration Tsunami

Innovative CIOs and their enterprise architects are embracing digital business design; the speed of change across traditional integration scenarios is accelerating; and the cloud is bringing additional complexity and yet more disruption to enterprise governance structures. Taken together, these trends would suggest that traditional landscapes of multiple integration silos are set to totally collapse. In this context, CIOs need to:

- **Monitor the agility of their integration tool landscape.** The time it takes to implement a single change, such as a changed schema for an order or customer record, across all integration tools is a crucial key performance indicator (KPI). If it takes months, your business agility is dead — and the lines of business will use more point-to-point integration solutions to bypass the inertia of the corporate integration platform.

- **Start transforming their integration tools today.** Hybrid² integration is not a single product you can buy from single vendors. It is an emerging set of capabilities for the selection of integration tools — and will soon be more important than the delivery of commoditized integration capabilities that no longer differentiate products.

- **Address any political power plays.** Providing value to the lines of business will be more popular internally than rigorously enforcing architectural policies. Try out the new generation of cloud-based integration tools, connect them to existing canonical data models and metadata life cycles, and offer new self-service integration value to your lines of business.

CIOs: Feel free to challenge Forrester. Share with us your pain points in implementing digital business design and the shortcomings of the integration tools you use. We will be happy to include these in the final set of criteria for our upcoming Forrester Wave evaluation of hybrid² integration tools. Tell us which criteria really matter in heterogeneous integration scenarios for large enterprises so that we can focus on them in our Forrester Wave research. We can then jointly challenge vendors to think outside the box and outside their niches to meet CIOs’ real needs.
SUPPLEMENTAL MATERIAL

Methodology
Forrester’s Forrsights Software Survey, Q4 2012, was fielded to 2,444 IT executives and technology decision-makers located in Canada, France, Germany, the UK, and the US from small and medium-size business (SMB) and enterprise companies with two or more employees. This survey is part of Forrester’s Forrsights for Business Technology and was fielded during November 2012 and December 2012. LinkedIn Research Network fielded this survey online on behalf of Forrester. Survey respondent incentives include gift certificates and research reports. We have provided exact sample sizes in this report on a question-by-question basis.

Each calendar year, Forrester’s Forrsights for Business Technology fields business-to-business technology studies in more than 17 countries spanning North America, Latin America, Europe, and developed and emerging Asia. For quality control, we carefully screen respondents according to job title and function. Forrester’s Forrsights for Business Technology ensures that the final survey population contains only those with significant involvement in the planning, funding, and purchasing of IT products and services. Additionally, we set quotas for company size (number of employees) and industry as a means of controlling the data distribution and establishing alignment with IT spend calculated by Forrester analysts. Forrsights uses only superior data sources and advanced data-cleaning techniques to ensure the highest data quality.

Companies Interviewed For This Report
Bosch Software Innovations
IBM
Informatica
MuleSoft
Oracle
SAP
Software AG
Tibco Software

ENDNOTES
1 For more details and individual data cuts by company size, check out the Forrsights Software Survey, Q4 2012 on Forrester.com.

2 For more insight into the concepts of systems of engagement and systems of record, see the February 13, 2012, “Mobile Is The New Face Of Engagement” report.

3 While digital business design articulates mainly enterprise architecture design principles, the hybrid² integration approach looks at the related tool landscape. For an introduction to the new enterprise integration strategy and design model, see the November 8, 2012, “Digital Business Design Is The New Integration” report.
4 For more details on how integration tools can be mapped to the corresponding design steps and roles, see the November 8, 2012, “Digital Business Design Is The New Integration” report.

5 Forrester has discussed the benefits of canonical data models around survey data for information-as-a-service strategies. See the November 15, 2007, “Canonical Information Modeling Is Key To Many Information-As-A-Service And SOA Strategies” report.

6 This history is one reason why different integration tools are mapped to discrete groups of people in a single enterprise. For an overview of the evolution of middleware tools, see the December 30, 2009, “Market Overview: The Middleware Software Market, 2009” report.

7 To help security and risk professionals navigate the complex landscape of privacy laws around the world, Forrester created a data privacy heat map that highlights the data protection guidelines and practices for 54 different countries. See the December 22, 2011, “Introducing Forrester's Data Privacy Heat Map” report.

8 The term “solutions” in this context implies a consistent suite that provides the handling of metadata, preintegrated installation processes, prepackaged integration scenarios, and unified user interfaces for all tools at least for developers or business users, respectively. Unfortunately, most vendors simply offer a portfolio of products with very basic integration. For an overview of CIS products, see the November 9, 2010, “The Forrester Wave™: Comprehensive Integration Solutions, Q4 2010” report.


10 For more insight about app integration with vendors, including HP, IBM, Oracle, Progress Software, SOA Software, Software AG, and WSO2, see the January 6, 2012, “The Forrester Wave™: SOA Service Life-Cycle Management, Q1 2012” report.
About Forrester

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CAROL ITO, client persona representing CIOs