

May 30, 2008

The Forrester Wave™: Requirements Management, Q2 2008

by Carey Schwaber and Mary Gerush
for Application Development & Program Management Professionals

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HP And IBM Lead, With MKS, Telelogic, Compuware, And Borland Close Behind

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EXECUTIVE SUMMARY

In Forrester's 79-criteria evaluation of requirements management tools vendors, five standalone requirements management tools and four application life-cycle management (ALM) solutions that include requirements management capabilities went head-to-head. Standalone tools fared better on average, but HP Quality Center ranked alongside IBM's Rational RequisitePro in the Leaders circle, and MKS's application life-cycle management solution joined standalone requirements management tools from Borland Software, Compuware, and Telelogic in the Strong Performers category. However, all three of our Contenders — Microsoft, Rally Software Development, and Serena Software — offer requirements management within a larger ALM solution. The availability of mature requirements management capabilities within larger ALM solutions complicates application development organizations' tool-selection process.

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NOTES & RESOURCES

Forrester conducted product evaluations in February 2008. We interviewed nine vendor companies — Borland Software, Compuware, HP, IBM, Microsoft, MKS, Rally Software Development, Serena Software, and Telelogic — as well as 16 of their customer references.

Related Research Documents

["The New Business Analyst"](#)

April 8, 2008

["EA+Requirements Management Increases Enterprise Agility"](#)

April 3, 2008

["Selecting The Right Requirements Management Tool — Or Maybe None Whatsoever"](#)

September 28, 2007

["The Root Of The Problem: Poor Requirements"](#)

September 1, 2006

["The Changing Face Of Application Life-Cycle Management"](#)

August 18, 2006

TOOLS IMPROVE THE EFFICIENCY OF MATURE REQUIREMENTS MANAGEMENT PRACTICES

The purpose of requirements management is to maximize the likelihood that an application development or maintenance initiative will deliver applications that function as desired. Requirements management helps accomplish this by: 1) storing requirements in a secure and central location; 2) tracking relationships among requirements artifacts; and 3) controlling changes to individual requirements and groups of requirements. More often than not, business analysts and project managers accomplish these three objectives without any specialized tool support, relying instead on manual effort or combinations of Microsoft Office and network drives. But purpose-built requirements management tools dramatically increase the efficiency of proper requirements management practices. While requirements management tools cannot themselves improve the quality of requirements, they do make it easier for business analysts and project managers to implement practices that have the same effect. Similarly, requirements management tools can't establish life-cycle traceability on their own, but they can serve as the starting point for a chain of traceability that extends from requirements to models to source code to test cases to deployed artifacts.

Requirements Management Tooling Comes On Its Own And Within Larger Offerings

While IT shops enlist a panoply of general purpose tools in support of requirements management, they have fewer choices when it comes to purpose-built requirements management tooling. Requirements management tool support comes in two forms:

- 1. Standalone requirements management tools.** Until recently, the only tools with support for requirements management were built for that purpose and that purpose alone. Vendors and customers built integrations between requirements management tools and other tools for activities like test management, but the tools that supported these activities were quite distinct and always sold separately. Forrester refers to collections of life-cycle tools connected by point-to-point integrations as ALM 1.0 solutions.¹ Vendors with standalone requirements management products include Borland (CaliberRM), Compuware (Optimal Trace), IBM (Rational RequisitePro), and Telelogic (DOORS). App dev organizations can adopt standalone requirements management tools to improve the efficiency of their requirements management practices, but they should be aware that these tools on their own cannot improve application life-cycle management practices such as traceability, workflow, and reporting across the life cycle.
- 2. Requirements management features within an ALM solution.** In the past few years, vendors have begun to build requirements management capabilities on top of single-repository ALM solutions. MKS was the first to do so, followed in short order by HP, Microsoft, Rally, and Serena. These vendors' ALM solutions have matured beyond ALM 1.0, but none has yet delivered a solution that meets Forrester's criteria for ALM 2.0 solutions.² App dev organizations that use requirements management capabilities within ALM solutions are typically more focused on the effectiveness and efficiency of the development life cycle as a whole than they are on the success of their requirements practices alone.

REQUIREMENTS MANAGEMENT EVALUATION OVERVIEW

To assess the state of the requirements management market and see how the vendors stack up against each other, Forrester evaluated the strengths and weaknesses of top requirements management vendors.

Evaluation Criteria Focus On Requirements Analysis, Integrations, And Product Road Maps

After examining the results of past research, vendor and expert interviews, requests-for-proposals, and user-needs assessments, we developed a comprehensive set of evaluation criteria to determine the relative position of leading requirements management solutions. We evaluated vendors against approximately 79 criteria, which we grouped into three high-level buckets:

- **Current offering.** To assess product strength, we evaluated nine principal categories of capabilities. To start with, we compared solution architecture and related attributes like interfaces, scalability and administration, and security. We considered requirements analysis capabilities like requirements input, linking and tracing, baselining, impact analysis, search, and reuse, weighting this core set of requirements management capabilities heavily. We considered each solution's support for collaboration, workflow, and reporting — enterprise-class features in a requirements management tool but table stakes in an application life-cycle management solution. Because many shops implement requirements management tools specifically to enable end-to-end traceability, we paid careful attention to how well these solutions integrate with tools for activities like requirements definition, software change and configuration management, test management, project portfolio management, and other tools through Web services and other APIs.
- **Strategy.** To judge the future direction of evaluated offerings, we compared vendors' short- and long-term requirements management product road maps to Forrester's forward-looking vision of the requirements management market. We also took into account vendors' use of technology partnerships to enhance the capabilities that they bring to market. In addition, we considered the degree to which the evaluated vendors focus on the requirements management market and the R&D resources that they dedicate to their offering. Because Forrester's clients are primarily enterprise IT organizations, we took into consideration the degree to which vendors target this market and the success they have had in it. Finally, we evaluated list license price — an important consideration in a market where the dominant solution is a combination of Microsoft Office and network drives.
- **Market presence.** To gauge market presence, we combined information about installed bases, annual revenues and annual revenue growth, number of employees, number of engineers, availability training and implementation services, and channel partnerships.

Evaluated Vendors Offer Purpose-Built Requirements Management Solutions

Forrester included nine vendors in its assessment: Borland, Compuware, HP, IBM, Microsoft, MKS, Rally, Serena, and Telelogic. Each of these vendors (see Figure 1):

- **Offers a requirements management tool.** Each of the vendors we evaluated has a product that is dedicated to requirements management or else has built several key requirements management features (e.g., linking and tracing, impact analysis) into its ALM solution. We excluded application life-cycle management tools that lack specific requirements management functionality (e.g., CollabNet Enterprise Edition). We also excluded tools in categories like collaboration (e.g., Microsoft SharePoint), content management (e.g., Vignette), and software change management (e.g., Atlassian JIRA), though such tools are often used to manage requirements.

Figure 1 Evaluated Vendors: Product Information And Selection Criteria

Vendor	Product evaluated	Product version evaluated	Version release date
Borland Software	CaliberRM	2006	December 2006
Compuware	Optimal Trace	5	August 2007
HP	Quality Center	9.2	June 2007
IBM	Rational RequisitePro	7.0.1	June 2007
Microsoft	Visual Studio Team System	2008	November 2007
MKS	MKS Integrity	2007	July 2007
Rally Software Development	Rally Enterprise	2007.7	December 2007
Serena Software	Dimensions RM	10.1.3	November 2007
Telelogic	DOORS	8.3	November 2007

Vendor qualification criteria

- The vendor’s product is generally available by the time of publication with at least two references available for contact.
- The vendor’s product is dedicated to requirements management or else several key requirements management features are built into its application life-cycle management (ALM) solution.
- The vendor’s product must have five large installations in five different industry segments.
- The vendors must have annual revenues of at least \$25 million.
- The vendor’s product must have been mentioned by Forrester clients at least three times within the past 12 months.

Source: Forrester Research, Inc.

- **Has a diverse installed base of customers using its requirements management tool.** We evaluated only vendors with established offerings that appeal to a broad range of customers. To this end, we required that each evaluated vendor have five large installations (i.e., spanning two or more locations and including at least 100 users) in five different industry segments (i.e., two-digit categories within the NAICS 2007 list of codes and titles). We excluded a related tool, Siemens PLM Software TeamCenter, for failure to satisfy this qualification.
- **Reports at least \$25 million in annual revenue.** Because Forrester's clients care about the financial viability of their vendors, we only evaluated vendors with annual revenues of at least \$25 million. Kovair failed to meet this requirement, and we excluded it from our evaluation as a result.
- **Attracts the attention of Forrester's clients.** To ensure that we focused our attention on the offerings of most interest to our clients, we only evaluated solutions that Forrester clients had mentioned in at least three inquiries in the past 12 months.

Our evaluation methodology depends in part on input from the vendors, including product demonstrations, questionnaires, and customer references. Microsoft chose not to provide a full set of inputs for Visual Studio Team System. As a result, our evaluation of Visual Studio Team System is based on a partial set of inputs, including a product briefing, a product demonstration, and an executive strategy interview, as well as ongoing interactions with Forrester clients who use Visual Studio Team System.

STRONG REQUIREMENTS MANAGEMENT CAPABILITIES NOW LIVE IN ALM SOLUTIONS

The evaluation uncovered a market in which (see Figure 2):

- **HP, IBM, and MKS excel at requirements management by leveraging shared platforms.** What do HP, IBM, and MKS have in common? All three vendors have, or soon will have, strong requirements management capabilities built on top of an enterprise-class ALM platform. HP is enhancing the requirements management capabilities it built on top of its ALM platform, Quality Center, and IBM is moving its requirements management capabilities onto its new ALM platform, Jazz. And MKS has already done the work that HP and IBM are doing; as a result, MKS turns in the highest current offering score of any evaluated vendor.
- **Borland, Compuware, and Telelogic have very capable standalone offerings.** These three vendors offer requirements management tools in discrete products. Rather than leveraging common capabilities in a common platform, these vendors' tools operate relatively independently. As a result, they are strong in areas specific to requirements management but weak in areas common to all aspects of the development life cycle, such as collaboration, workflow, and reporting. The degree to which these products can be used as part of a larger

ALM solution depends on supported integrations rather than included capabilities; supported integrations vary from vendor to vendor as well as over time.

- Microsoft, Rally, and Serena make requirements management possible, not practical.** Microsoft, Rally, and Serena finish as Contenders in our evaluation more on the basis of capabilities in their ALM platform than on the basis of functionality specific to requirements management. This demonstrates that ALM vendors have to invest substantial development dollars to build proper support for requirements management. Serena has invested in this area but has not sustained its investment; Microsoft has begun to make this investment but hasn't yet brought its new capabilities to market; and Rally believes it has invested enough to serve the needs of its target customers.

Figure 2 Forrester Wave™: Requirements Management, Q2 '08

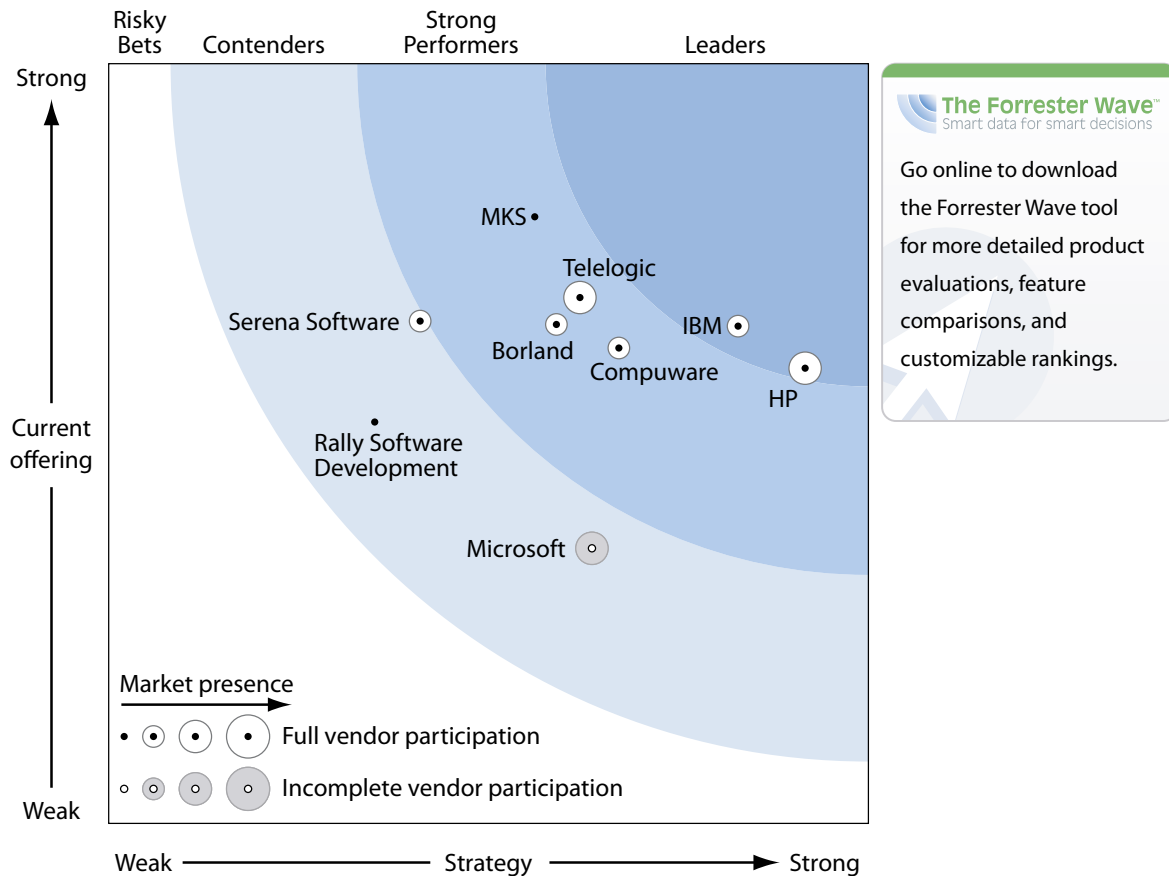


Figure 2 Forrester Wave™: Requirements Management, Q2 '08 (Cont.)

	Forrester's Weighting	Borland	Compuware	HP	IBM	MKS	Rally Software Development	Serena Software	Telelogic
CURRENT OFFERING	50%	3.29	3.13	2.98	3.28	3.99	2.65	3.31	3.47
Solution architecture	2%	2.00	2.90	3.50	3.05	4.30	3.70	2.30	2.30
Interfaces	5%	2.80	1.20	3.50	3.10	2.80	4.70	3.50	1.20
Scalability and administration	5%	4.85	2.15	5.00	2.70	2.65	4.00	2.70	3.25
Security	3%	3.50	1.00	2.00	1.50	5.00	0.50	2.00	4.25
Requirements analysis	50%	3.76	4.06	2.30	4.32	4.70	1.94	4.00	4.32
Collaboration	5%	0.90	3.50	3.50	0.90	3.50	5.00	3.50	0.00
Workflow	5%	2.00	2.24	3.68	2.00	3.00	0.24	2.00	2.24
Reporting	10%	3.50	2.90	4.14	1.70	4.50	4.20	1.70	2.50
Life-cycle integration	15%	2.55	1.80	3.35	2.70	2.40	3.15	3.00	3.65
STRATEGY	50%	2.95	3.35	4.60	4.15	2.80	1.75	2.05	3.10
Product strategy	75%	2.80	3.40	5.00	4.20	3.00	1.40	1.80	3.00
Corporate strategy	10%	2.50	3.50	2.50	2.50	4.00	1.00	1.00	2.50
Cost	15%	4.00	3.00	4.00	5.00	1.00	4.00	4.00	4.00
MARKET PRESENCE	0%	2.59	2.70	3.80	2.35	1.98	0.60	2.82	3.98
RM installed base	40%	3.00	3.00	3.00	0.00	1.00	0.00	3.00	5.00
Revenue	20%	3.00	4.00	5.00	5.00	2.00	0.00	3.00	3.00
Revenue growth	10%	0.00	1.00	3.00	1.00	4.00	0.00	3.00	4.00
Employees	10%	2.60	1.80	3.00	3.00	2.20	1.40	2.00	3.40
Services	10%	4.50	3.00	5.00	4.50	3.00	3.00	2.00	4.00
Partnerships	10%	0.80	1.20	5.00	5.00	2.60	1.60	3.20	2.40

All scores are based on a scale of 0 "weak" to 5 "strong".

Source: Forrester Research, Inc.

This evaluation of the requirements management market is intended to be a starting point only. Readers are encouraged to view detailed product evaluations and adapt the criteria weightings to fit their individual needs through the Forrester Wave™ Excel-based vendor comparison tool.

VENDOR PROFILES

Leaders: IBM And HP Have Strong Solutions And Even Stronger Strategies

- **IBM.** IBM Rational RequisitePro is a competent product overall, with industry-leading Microsoft Word integration and no deficiencies in core requirements analysis capabilities. Its primary weaknesses are in areas like collaboration, workflow, reporting, and security — all areas where requirements management tools built on top of ALM solutions tend to be strong. The good news is that by moving RequisitePro on top of its new Jazz ALM platform, IBM will give RequisitePro access to shared services that deliver this functionality. IBM also plans to improve its requirements definition capabilities and ultimately the connection between requirements definition and requirements management.
- **HP.** Though long used for lightweight requirements management, HP Quality Center only acquired true requirements management capabilities in 2007. The strength of HP's current offering comes more from the Quality Center platform than from purpose-built requirements management features; Quality Center lacks support for core requirements management activities like baselining and requirements reuse. Even so, Quality Center is a disruptive force in this market: It has an enormous installed base of customers using it for test management and defect management, and its requirements management capabilities are available to customers on maintenance at no additional cost. HP's product road map includes support for sharing assets across projects, versioning, baselining, and reporting; adding these features will make Quality Center an even stronger alternative to incumbent requirements management offerings.

Strong Performers: MKS, Telelogic, Compuware, And Borland Have Capable Offerings

- **MKS.** In an upset, the three-year-old requirements management capabilities in MKS's ALM solution turned in the highest current offering score in our evaluation, beating even Telelogic DOORS. The strength of the MKS solution demonstrates the power of specific requirements management functionality built on top of an ALM platform. The product includes outstanding support for Microsoft Word and Microsoft Excel as requirements input mechanisms and superior support for requirements reuse (both core requirements management capabilities) in addition to great strength in security, workflow, and reporting (all typical capabilities of an ALM solutions). But to implement MKS's requirements management tool, app dev shops must implement MKS's entire ALM solution, including both the software configuration management and the software change management components. The result is a pricey package that includes functionality far above and beyond requirements management.
- **Telelogic.** Telelogic DOORS has long been considered the Cadillac of requirements management, so full-featured that it was used to manage complex systems development efforts more often than application development efforts.³ In recent years, it has made inroads into software development as well. However, IBM recently acquired Telelogic specifically to improve its position in systems development; as a result, IBM will likely keep DOORS focused on the needs of the systems development market. The product's strengths are its core requirements

management functionality, security, and integration with requirements definition, software change and configuration management, test management, and project portfolio management tools. Some notable weaknesses include collaboration, workflow, and reporting, as well as the lack of an included Web interface.

- **Compuware.** Compuware acquired Optimal Trace, née SteelTrace, in 2006 and has had a great deal of success with the product since. Optimal Trace is a very strong standalone requirements management tool with great support for core requirements management activities, lacking only in its level of support for Microsoft Word and Microsoft Excel. Included requirements definition capabilities also distinguish Optimal Trace from its competitors. The product's two most notable weaknesses are the number of supported integrations with relevant life-cycle tools and its track record of scalability; Optimal Trace scored worse in these two areas than any other evaluated offering.
- **Borland.** Borland's requirements management tool, CaliberRM, is an established standalone requirements management tool. Borland has invested in integrations between CaliberRM and tools for requirements definition, software change and configuration management, and test management, but the product nonetheless ranks lower on this front than competing offerings. CaliberRM's strengths include scalability and cost of administration, support for reporting, and support for collaboration through threaded discussions. Borland's product road map for CaliberRM includes better connection to requirements definition capabilities, including those in Borland DefineIT and Borland's newly-acquired Simunication product, as well as an improved Web interface and database back end for CaliberRM itself.

Contenders: Use Serena, Rally, And Microsoft Only For The Sake Of The Bigger Picture

- **Serena.** Serena acquired a standalone requirements management tool, RTM, from Integrated Chipware in 2004, but it moved these capabilities onto the same repository as its Dimensions software change and configuration management solution in 2006. This new incarnation of Serena's requirements management tool, rebranded Dimensions RM, turned in a middle-of-the-road performance in our evaluation, with notable deficiencies in areas like offline usage, workflow, reporting, and administration. Serena does its customers a favor that no other ALM vendors do in permitting them to purchase requirements management capabilities built on top of an ALM solution without forcing them to buy the entire ALM solution. However, Serena's planned enhancements for Dimensions RM are unambitious, and its focus as a company has shifted away from requirements and toward Web 2.0.
- **Rally.** Rally designed the requirements management capabilities in Rally Enterprise, a software-as-a-service (SaaS) ALM solution, to suit teams using Agile processes.⁴ The product performs flawlessly in this regard, but it lacks features that both Agile and non-Agile teams expect from a requirements management solution, such as support for Microsoft-Office-based requirements input, baselining, security, and workflow. Rally's solution is more appropriate for Agile teams or

Agile shops than any other requirements management solution. When it comes to supporting teams and shops that use other development processes, however, Rally's requirements management solution can't compete.

- **Microsoft.** Microsoft customers often stretch Visual Studio Team System's work item tracking to fit their need for a requirements management solution. But at present, the product lacks support for basic requirements management activities like baselining, linking and tracing, and impact analysis. Microsoft is investing in requirements management capabilities, however, and VSTS customers and prospects should expect enhanced support in the Rosario release. In the meantime, Borland CaliberRM integrates with Visual Studio Team System to provide requirements management capabilities.

RECOMMENDATIONS

MAKE YOUR REQUIREMENTS MANAGEMENT TOOL SELECTION IN CONTEXT

Requirements management purchasing decisions are more complicated now that full-featured requirements management capabilities are available within ALM solutions. Application development organizations should:

- **Look at the big picture before adopting a standalone requirements management tool.** Application development shops often mistakenly adopt requirements management tools to improve their ALM practices. If the scope of your shop's short- and long-term goals really is limited to improving requirements management practices, then a standalone requirements management tool will likely meet your needs. Otherwise, adopting a standalone requirements management tool without respect to its supported integration may hinder your goals as much as it helps.
- **Not try to use an ALM solution for requirements management alone.** In addition to requirements management, the HP, MKS, and Rally ALM solutions include support for activities like test management, software change management, software configuration management, build management, project management, and portfolio management. These vendors haven't yet made it possible to implement requirements management alone, and until they do, shops that are looking only for requirements management should look elsewhere. Using nothing more than the requirements management functionality in an ALM solution is like buying an expensive home theatre just to watch the news.
- **Not let support for requirements management drive their ALM tool selection.** ALM tool selection is complicated, to say the least. Finding an ALM solution with adequate support for requirements management is the simplest part of the puzzle. Requirements management tools, for example, are equally applicable no matter whether you are a Java or .NET shop, which isn't the case for every type of life-cycle tooling. Don't adopt an ALM solution for requirements management in the hopes that other modules will ultimately prove useful as well.

SUPPLEMENTAL MATERIAL

Online Resource

The online version of Figure 2 is an Excel-based vendor comparison tool that provides detailed product evaluations and customizable rankings.

Data Sources Used In This Forrester Wave

Forrester used a combination of three data sources to assess the strengths and weaknesses of each solution:

- **Vendor surveys.** Forrester surveyed vendors on their capabilities as they relate to the evaluation criteria. Once we analyzed the completed vendor surveys, we conducted vendor calls where necessary to gather details of vendor qualifications.
- **Product demos.** We asked vendors to conduct demonstrations of their product's functionality. We used findings from these product demos to validate details of each vendor's product capabilities.
- **Customer reference calls.** To validate product and vendor qualifications, Forrester also conducted reference calls with two of each vendor's current customers.

The Forrester Wave Methodology

We conduct primary research to develop a list of vendors that meet our criteria to be evaluated in this market. From that initial pool of vendors, we then narrow our final list. We choose these vendors based on: 1) product fit; 2) customer success; and 3) Forrester client demand. We eliminate vendors that have limited customer references and products that don't fit the scope of our evaluation.

After examining past research, user need assessments, and vendor and expert interviews, we develop the initial evaluation criteria. To evaluate the vendors and their products against our set of criteria, we gather details of product qualifications through a combination of lab evaluations, questionnaires, demos, and/or discussions with client references. We send evaluations to the vendors for their review, and we adjust the evaluations to provide the most accurate view of vendor offerings and strategies.

We set default weightings to reflect our analysis of the needs of large user companies — and/or other scenarios as outlined in the Forrester Wave document — and then score the vendors based on a clearly defined scale. These default weightings are intended only as a starting point, and readers are encouraged to adapt the weightings to fit their individual needs through the Excel-based tool. The final scores generate the graphical depiction of the market based on current offering, strategy, and market presence. Forrester intends to update vendor evaluations regularly as product capabilities and vendor strategies evolve.

ENDNOTES

- ¹ ALM 1.0 solutions don't offer much support for ALM beyond what can be accomplished through brittle tool-to-tool integrations. Characteristics of ALM 1.0 solutions include: 1) a single tool for each role; 2) redundant and inconsistent ALM features locked in practitioner tools; 3) microprocesses embedded in tools and macroprocesses embedded in tool integrations; and 4) integration through brittle repository synchronization mechanisms. See the August 18, 2006, "[The Changing Face Of Application Life-Cycle Management](#)" report.
- ² Characteristics of ALM 2.0 solutions — tomorrow's ALM platforms — include: 1) common services available across practitioner tools; 2) practitioner tools assembled out of plug-ins; 3) repository neutrality; 4) use of open integration standards; and 5) microprocesses and macroprocesses governed by externalized workflow. See the August 18, 2006, "[The Changing Face Of Application Life-Cycle Management](#)" report.
- ³ Systems development efforts produce complex products that include both software and hardware components, while application development efforts produce only software. Systems development is common in industries like aerospace and defense and at technology product companies. IBM Rational has historically targeted both the software and systems development markets; it has lost market share in the systems development market in the past, but its acquisition of Telelogic improves its position in the space.
- ⁴ More than half of enterprises that aren't already using Agile processes are interested in adopting them. But many of these shops aren't completely clear about what Agile adoption really entails. As a result, shops that adopt Agile processes are often surprised by the amount of change that's required. Forrester published a document that answers frequently asked questions about Agile processes and what it really takes to "go Agile." See the August 29, 2007, "[The Truth About Agile Processes](#)" report.

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