Java: Modernizing Development for Secure, Cloud-based Applications

A VDC Analyst Brief

This brief establishes the growing demand for development solutions such as Java that can address common business goals and next-generation technology trends.

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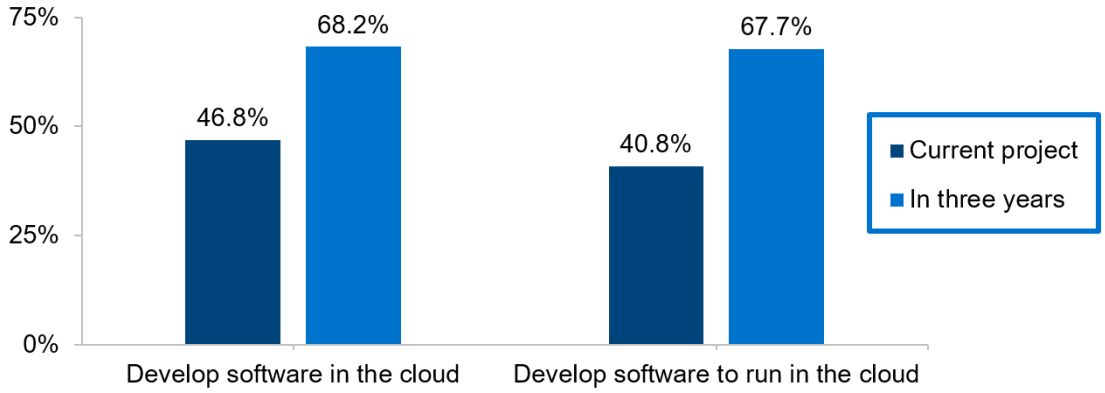
INTRODUCTION

The transformation of development organizations is well underway. Legacy applications and deployments are being phased out in favor of agile and cloud-based development. As development organizations strive to adapt to an ever-evolving business landscape, the need to efficiently scale application development and deployment has taken a center role in organizational strategy and success. With two-thirds of developers expecting to use the cloud for their projects in three years, its impact is set to continue to grow in the future. The criticality of cloud functionality to business goals and operations, however, underscores the importance of choosing not only flexible and scalable solutions, but also those that are proven, stable enterprise-grade platforms that can serve as a foundation of innovation for years to come.

Java Leading Language Choice:

- Java #1 rated language for top tech trends
- Java #1 language for cloud-native development
- Java is the highest-rated language developers trust to address security initiatives
- Organizations not using Java are nearly 2x as likely to be behind schedule

Exhibit 1: Cloud Utilization
(Percentage of Respondents)



The modernization of application development is altering the technology solution landscape, causing organizations to accelerate their digital transformation and reevaluate their development platform and enablement choices. One such technology choice that remains important and impactful on project outcomes is software development language. Across a range of technology trends and for cloud development, Java has emerged the leading choice for professional development organizations. In fact, 75% of developers state that Java helps their organization efficiently develop cloud-native applications (See Exhibit 4). Over the course of this paper, we will be exploring this dynamic and our related research that shows that Java is a leading choice among developers and well positioned to assist organizations in navigating today's technology trends.

BACKGROUND ON THIS PRIMARY RESEARCH

VDC Research has been covering the software development technology market since 1994. The analysis and supporting discussions in this paper are based on VDC's ongoing research in this market and by findings from a 2022 survey of 509 technology executives, managers, and developers. This global survey offers insight into leading business and technical trends impacting development organizations as well as the best practices and technologies implemented to address them

JAVA: THE #1 DEVELOPER LANGUAGE

Amidst all the change in technology trends and business goals, Java has been a pillar of the development solution landscape for over two decades, once again ranking as the most frequently used development language. Thanks to the continued evolution of its features and libraries and regular updates from Oracle, Java remains a leading choice of enterprise developers. To this end, its use has grown in recent years while other languages like C++ and C have declined. Our research demonstrates this steady presence and growth in both this year's results as well as prior years' surveys.

Exhibit 2: Current & Previous Project Language Use
(Percentage of Respondents)

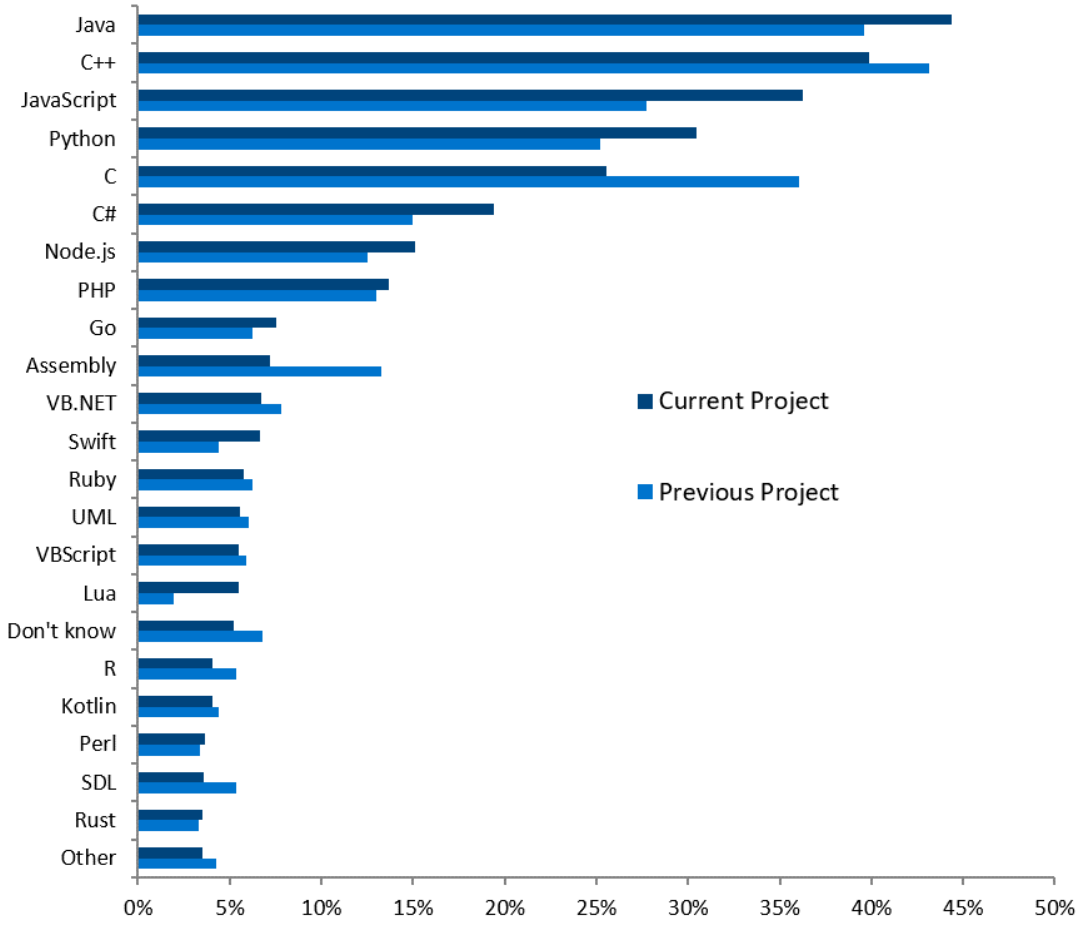
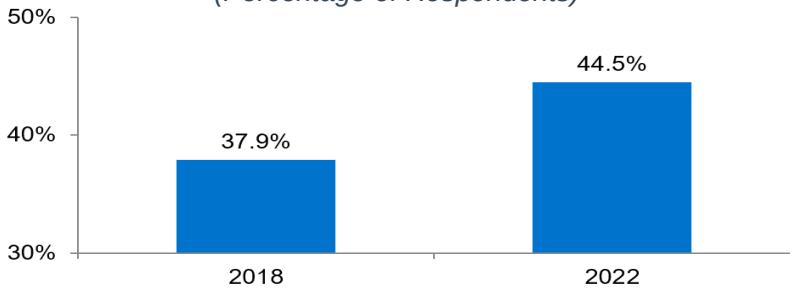


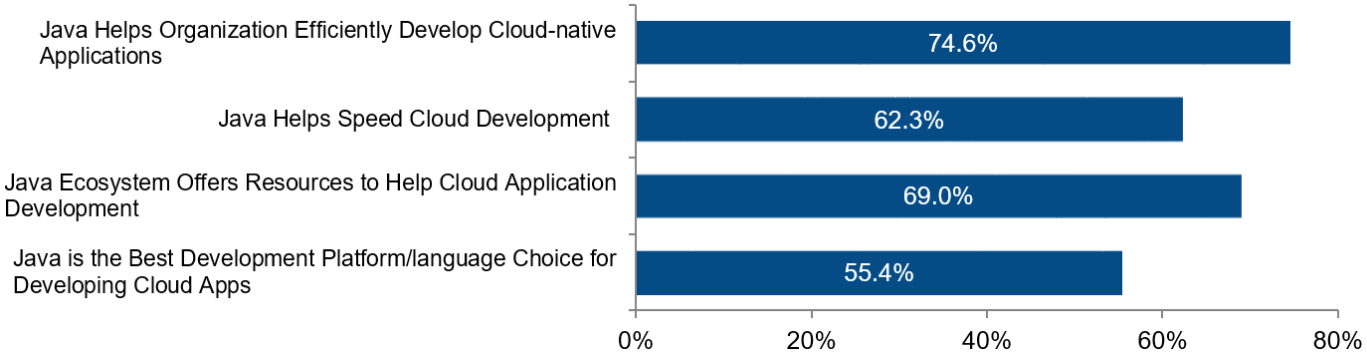
Exhibit 3: Current Project Java Use
(Percentage of Respondents)



Having emerged as an early and common choice to address new application needs, Java's presence in the cloud ecosystem has been building for years. In fact, cloud-based JVMs are on a trajectory to grow 10.9% per year through 2026 to reach an active installed base of 83 billion. Beyond somewhat silently establishing itself as the key software development platform enabling the cloud over the years, developers are now resoundingly recognizing its utility in this arena. Not only is Java widely known as powering fast and efficient cloud development, but the majority of developers now also cite it as the best development platform choice for that purpose. With this foundation firmly established, Java, and the suite of solutions Oracle provides around it, are well positioned and increasingly recognized as key components of next generation development platform best practice.

75% of developers state Java makes Cloud-native development efficient

Exhibit 4: Java Cloud Developer Perceptions
(Percentage of Respondents)

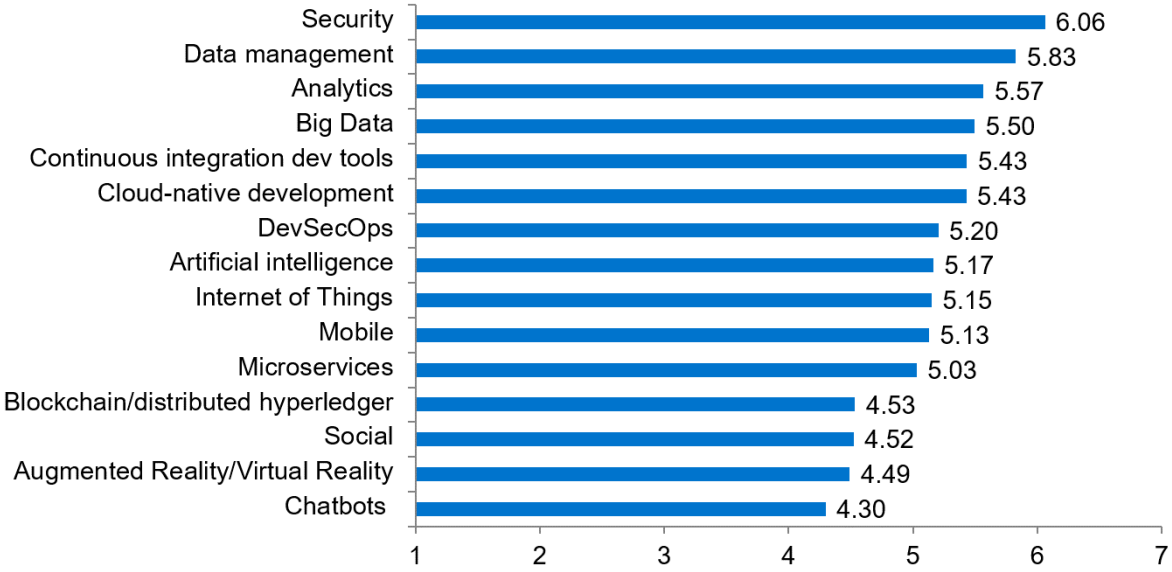


SECURITY NEEDS REDEFINING TECH CHOICES

Finding solutions to help accelerate cloud development is critical. But solution selection must incorporate more than just developer efficiency or coding preference. A technology's ability to address and support organizations' next generation initiatives is critical. For example, in the cloud-based development world, with more connectivity comes more risk. To this end, security is becoming increasingly important for all organizations to consider. Within our research, security is by far the most important trend as rated by developers surveyed.

Beyond operating from a reactive or defensive position, 50.7% of developers indicate that their organizations now have a specific strategy in place for advancing their business's security posture. A recognition of the need to proactively address security is only a first step. Organizations must next identify the technologies capable of helping their development teams minimize vulnerabilities and fortify their systems.

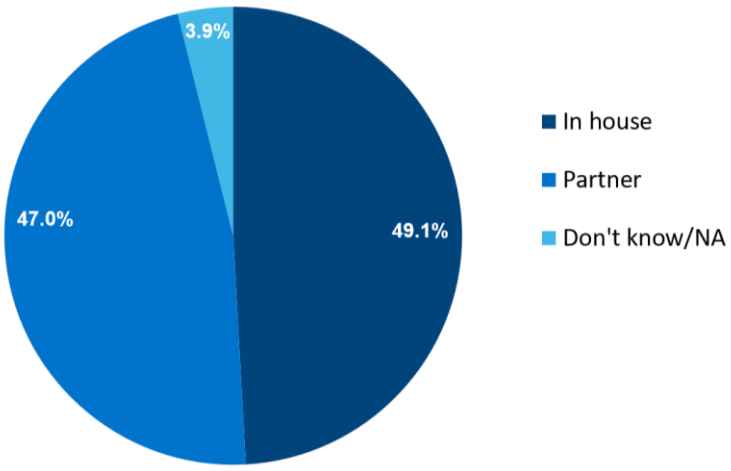
Exhibit 5: Mean Importance of New Technology Initiatives
(1=Not At All Important, 7=Extremely Important)



Out of over 20 software development languages assessed, Java is rated as the top language for addressing security initiatives. In addition to being noted as an organizational imperative, security is also the third-most cited development challenge. As the potential cost and impact of security rises, so too will the importance of identifying technologies and partners that can help address it. Java helps address this by not only providing development organizations a robust and stable platform, but also regular feature and security updates. In addition to Java's stated value in this arena, Oracle's suite of products can assist organizations needing enterprise-grade solutions and expertise. Oracle's Java Management Service offers a better ability to mitigate risks by providing visibility and insight to end-of-public-update (EoPU) versions while giving the flexibility to extend lifetime of older Java versions. Already, nearly half of organizations with security initiatives recognize a need to leverage their partner ecosystem to enhance their internal capabilities.

Java is the top language for addressing security initiatives

Exhibit 6: How Security Capabilities Will be Developed
(Percentage of Respondents)



JAVA LEADING LANGUAGE FOR TODAY'S AND TOMORROW'S TRENDS

In our 2022 survey, over 500 developers and tech leaders rated the languages used by their organization in their utility versus the leading tech trends being pursued by their organization. Java was in the top two most important cited languages for every trend evaluated, with the only exception for chatbots (which respondents rated the least important trend in 2022). In fact, Java was ranked first in more than twice as many tech trend categories as any other language.

Java #1 rated language for top tech trends

Exhibit 7: Java's Rank among Languages in Rated Importance for Key Trends (Rank based on mean ratings from Not At All Important to Extremely Important)

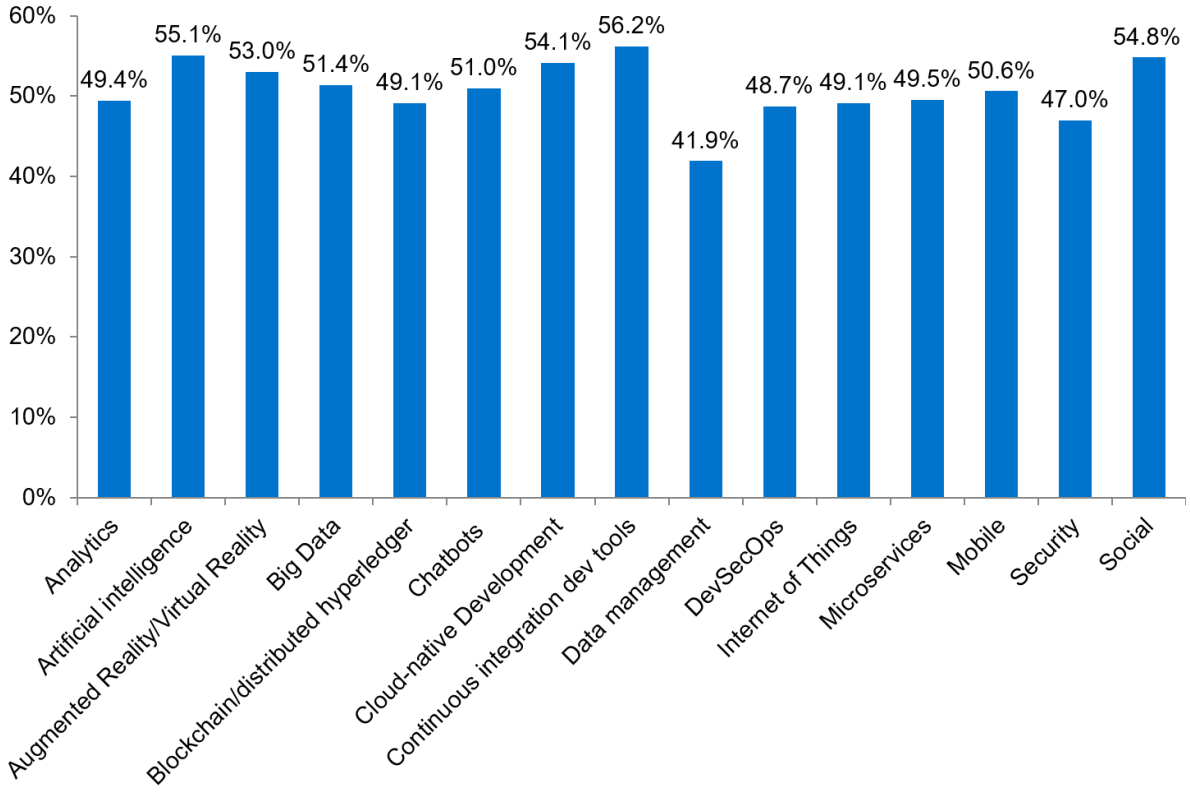
Java had the highest overall average rating against the top 15 technology trends. Furthermore, Java's value extended beyond just bespoke utility against new or buzzy development initiatives. Java was also found to have the highest rate of use in professional development organizations overall (54.6%). Addressing the key trends facing enterprise organizations keeps Java relevant for the next generation of developers, but the noticeable impact on operations should make development leaders and CIOs prioritize investment in the Oracle Java ecosystem of solutions.

THE POWER OF THE JAVA ECOSYSTEM

There is an increasing recognition in the market that organizations simply cannot keep up with pace of change in the ecosystem organically. To both scale and focus on innovation, organizations must pick their spots and choose when to look for external experts to help. As important as it is to choose the best technology aligned with corporate initiatives, it is equally important to choose the right partners. After asking organizations about their pursuit of next-generation development initiatives, we asked them how they planned to develop those capabilities. It should be no surprise that the enterprises surveyed recognize a need for help from external organizations. As important as it is for organizations to leverage next generation technology trends for their differentiation, it is equally important to ensure their effective and efficient implementation. To maximize chances for success and accelerate time to market, it is critical to identify the right partners that can help one navigate the complexities of today's development environment.

> Development organizations must know when to look for external ecosystem to address next generation needs

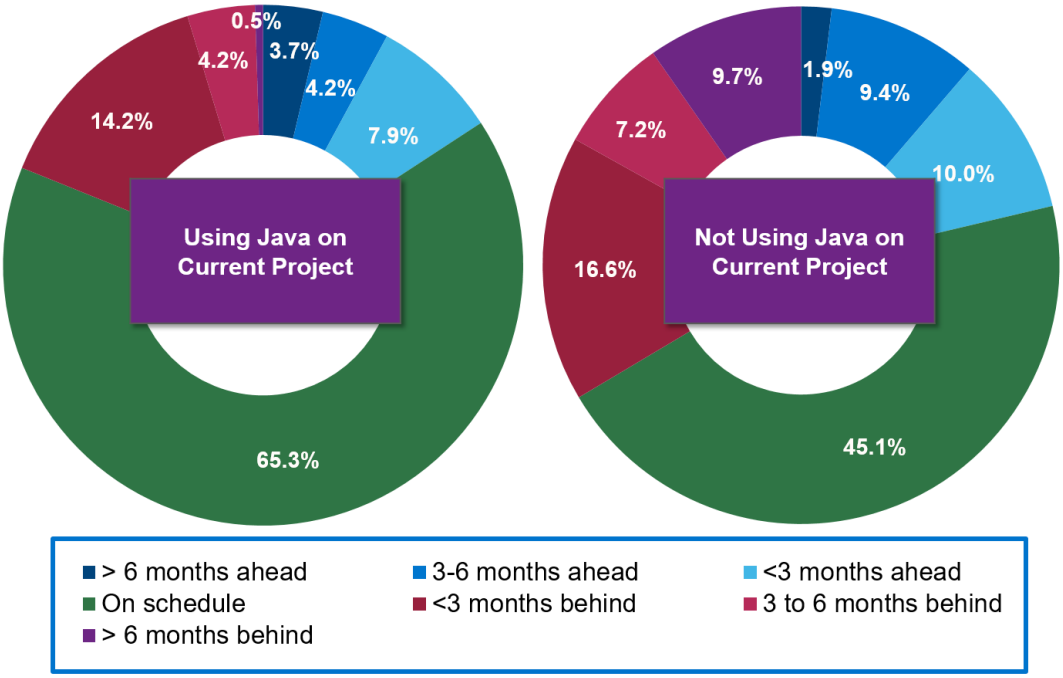
Exhibit 8: Rate of Partnership by Organization to Help Develop New Capabilities (Percentage of Respondents)



As noted, for these modern trends, more developers were looking at Java as the best solution for their organization. After recognizing both the need for partners to help as well the corresponding need to identify organizations that can offer long-term viability in support, the choice of partners such as Oracle, whose solutions and expertise can help developers maximize the potential benefits of Java, becomes clear.

Organizations not using Java are nearly 2x as likely to be behind schedule

Exhibit 9: Project Schedule Adherence
(Percentage of Respondents)

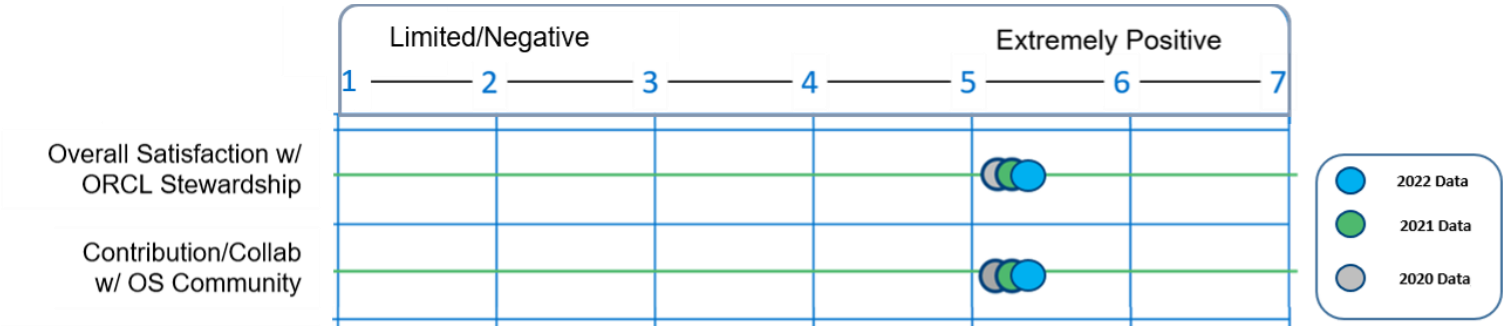


Furthermore, beyond just strategic alignment, Java solutions can help organizations achieve bottom-line results. Projects using Java were more likely to be on time or ahead of schedule compared to projects not using Java. In fact, projects are nearly twice as likely to be behind schedule if they are not using Java. Not only are non-Java projects more likely to be late, but an even greater portion of those projects are more than 3 months late (9.7% vs. 0.5%). Clearly, the ecosystem, stability, and scalability of the Java platform provide organizations with a foundation for not only application modernization, but also efficient development.

VDC'S VIEW

The benefits from Java extend beyond the language's utility alone. Not only Java has repeatedly received the highest rankings in VDC's research for its use addressing next generation tech trends, but it also demonstrates an ability to help organizations improve development schedules, thus saving precious resources and cost. Just as important as considering these potential impacts, however, is the need to assess how the ecosystem surrounding a chosen technology can create a foundation for sustained success in the future.

Exhibit 10: Perception of Oracle and Java Ecosystem
(Mean of Responses)



To support innovation of the Java platform, Oracle has invested in the larger ecosystem surrounding it and in other complimentary solutions that can help developers find success in a cloud-native world. For example, Oracle has been highly rated in its stewardship of the open-source ecosystem, with developers' perceptions continuing to improve year over year [See Exhibit 8]. For business looking for on-prem and hybrid Java solutions, Oracle has a subscription model called Java SE Subscription that offers GraalVM Enterprise to get performance boost, Java Management Service to improve visibility and insights while giving them more flexibility, access to updates on the legacy releases and Oracle support.

As organizations look to a cloud-first future, Oracle has likewise moved to support cloud development and innovation with Java and Oracle Cloud Infrastructure (OCI). The GraalVM integration with OCI shows further adaptation, demonstrating Oracle's investment in multi-language development and its desire to help organizations, regardless of development languages used. Oracle's steady improvement across these dimensions further demonstrate the results of its continued investment around Java as well as the results from the positive reception to its semi-annual update cadence it recently implemented.

As development enterprises plan for the future, three things are abundantly clear:

1. Java is the most trusted language for current and future tech needs
2. Oracle continues to invest and is committed to Java and the needs of its developers
3. Java is firmly established as the leading language for both today's and tomorrow's secure cloud development

ABOUT THE AUTHOR

Chris Rommel is responsible for syndicated research and consulting engagements focused on development and deployment solutions for intelligent systems. He has helped a wide variety of clients respond to and capitalize on the leading trends impacting next-generation device markets, such as security, the Internet of Things, and the growing need for system-level lifecycle management solutions. Chris has also led a range of proprietary consulting projects, including competitive analyses, strategic marketing initiative support, ecosystem development strategies, and vertical market opportunity assessments. Chris holds a B.A. in Business Economics and a B.A. in Public and Private Sector Organization from Brown University.

ABOUT VDC RESEARCH

Founded in 1971, VDC Research provides in-depth insights to technology vendors, end users, and investors across the globe. As a market research and consulting firm, VDC's coverage of AutoID, enterprise mobility, industrial automation, and IoT and embedded technologies is among the most advanced in the industry, helping our clients make critical decisions with confidence. Offering syndicated reports and custom consultation, our methodologies consistently provide accurate forecasts and unmatched thought leadership for deeply technical markets. Located in Natick, Massachusetts, VDC prides itself on its close personal relationships with clients, delivering an attention to detail and a unique perspective that is second to none.

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