

# Modernizing Your Applications: Collaboration With Security Teams Increases Innovation

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## Executive Summary

Digital customer experience has become a pivotal differentiator among businesses. Increasingly, customers seek and experience products and services via digital touchpoints. In response, developers turn to cloud development – the use of on-demand, self-provisioned infrastructure, platform, and software services to facilitate the deployment of applications without acquiring and managing underlying hardware – platforms for the agility required to address skyrocketing demand for new software. But this hasn't been a seamless transition in the context of ubiquitous security concerns that call for engaging experiences that anticipate the customer's need without trampling on their privacy. As a result, development and security teams must balance features with the safety of their data and applications, while working at digital speed to keep up with the competition.

In October 2015, New Relic commissioned Forrester Consulting to evaluate current levels of collaboration between application developers and security professionals, the associated tools and practices in use, and the outcomes of those practices. Forrester tested the hypothesis that security concerns are a drag on enterprises' increased adoption of cloud software development. Further, Forrester posited that collaboration between developers and security pros helps to alleviate these concerns. We also sought to uncover the tools and processes that empower high collaboration between developers and security professionals.

**Increasingly, developers are turning to cloud development platforms to handle the skyrocketing demand for new software, but security concerns have hindered the transition.**

In conducting an in-depth survey of 151 IT security, development, and software architecture professionals at US enterprises with at least 1,000 employees, Forrester found that developers who regularly collaborate with their security colleagues on software development tasks get significant value from their efforts, which produce major and tangible business and technical benefit. Forrester also found that certain tools — and their deployment models — are positively correlated with greater developer and security collaboration.

## KEY FINDINGS

Forrester's study yielded four key findings:

- › **Enterprise cloud development is quickly increasing as business demands for custom software skyrocket.** A significant majority of survey respondents reported increased importance of custom-built software to their business' ability to innovate. As a result, they are seeing greater demand for new applications of increasing complexity from across the enterprise. In response, cloud development has boomed over the past year, with some cloud-based systems of engagement and supporting systems of record types doubling in volume.
- › **Security concerns hinder cloud development's potential.** Security isn't just the No. 1 factor limiting cloud development; it is also one of few factors that survey respondents are more likely to classify as a "major concern" as opposed to "moderate." And developers aren't in tune with the rank or degree of security professionals' specific concerns pertaining to cloud development.
- › **Regular collaboration between developers and security colleagues begets secure, high-performing cloud development.** Regardless of the extent to which they collaborate on software development projects, developers and security professionals alike are united on the value of such collaboration. "Frequent collaborators," who have embedded such practices in their development cycles, are much more likely to cite higher levels of benefit than their "infrequent collaborator" counterparts. Frequent collaborators credit their collaboration with providing major benefits, including improved customer satisfaction, business/IT alignment, quality and frequency of releases, and the rate of innovation at their firms.
- › **Frequent collaborators incorporate cloud development tools as core workflow components.** In support of high-bandwidth collaboration, frequent collaborators are more than twice as likely as infrequent collaborators to employ software development and security tools. Furthermore, they are more than four times as likely to deploy those tools in the cloud.

## Custom Software Increasingly Powers Modern Business

Thought leaders and business executives have been saying for years that “every company is a software company.”<sup>1</sup> Effective, engaging, performant software is especially relevant in today’s age of the customer, where software can make or break a company’s ability to win, serve, and retain increasingly discerning and powerful customers.

Custom software development is a particularly critical aspect of this new imperative, as it differentiates a business’ engagement with customers from its peers, regardless of whether a customer is engaging for the first time or returning for her thousandth transaction. It enables a firm to deliver its core products and services in unique and efficient ways, while showcasing innovation that delights existing customers and attracts new prospects.

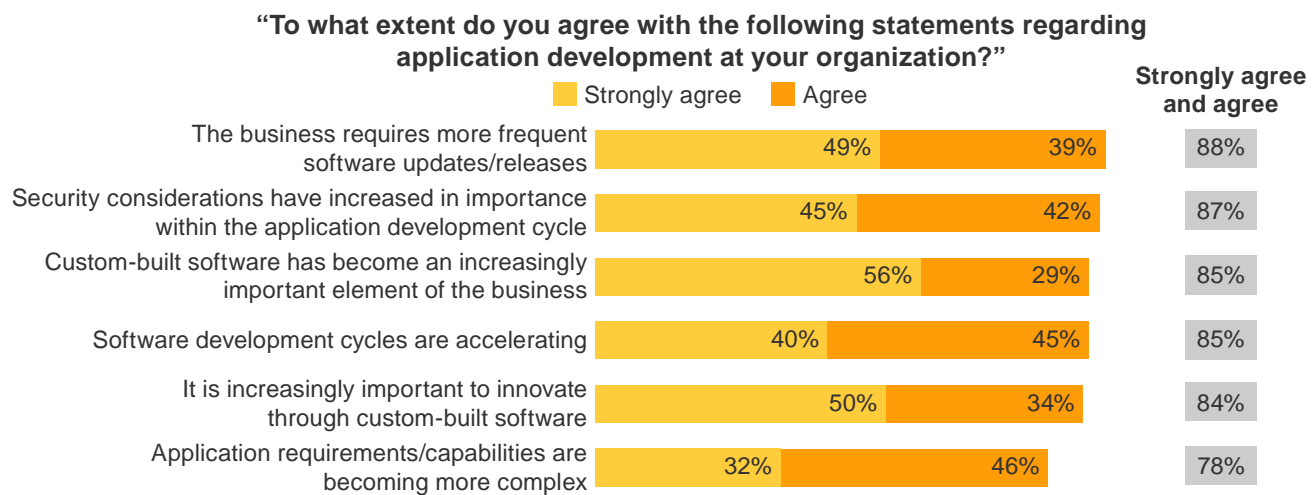
Just how important is custom software, and to what extent does it drive modern organizations? Our analysis shows that:

### › Custom software is essential to modern business.

Eighty-five percent of our survey respondents agreed — two-thirds of whom strongly agreed — that custom-built software is increasingly important to their business. Why? Because it helps them innovate: 84% agreed that it is increasingly important to innovate through custom-built software (see Figure 1).

- › **Demand for new cloud applications and services is increasing across the enterprise.** Cloud application proliferation is a firmwide phenomenon, with five out of seven departments we asked about — including finance, marketing, and sales — currently employing at least four cloud applications. Unsurprisingly, software developers and other IT teams are the biggest users of cloud applications, with nearly half (46% to 47%) of these departments leveraging seven or more examples. On average, only 7% of enterprises have any departments not currently using cloud applications, and a whopping 89% of all departments are planning to add new cloud applications within the next 12 to 18 months. Some departments, such as IT, sales, and marketing, are planning to double the size of their portfolio.
- › **Development speed and application requirements are intensifying.** Developers aren’t merely contending with increased demand for cloud applications. They’re also faced with shorter development timelines than they’ve experienced before. Eighty-eight percent of the developers we surveyed feel increased pressure from the business to produce more frequent releases or updates. Therefore, 84% reported accelerating development cycles, and about half (51%) release at least monthly. What’s more, 77% of these developers said that the business now demands software with more complex requirements and capabilities than previously.

**FIGURE 1**  
Custom Software Is Critical To The Modern Enterprise



Base: 101 application development and software architecture professionals at US enterprises

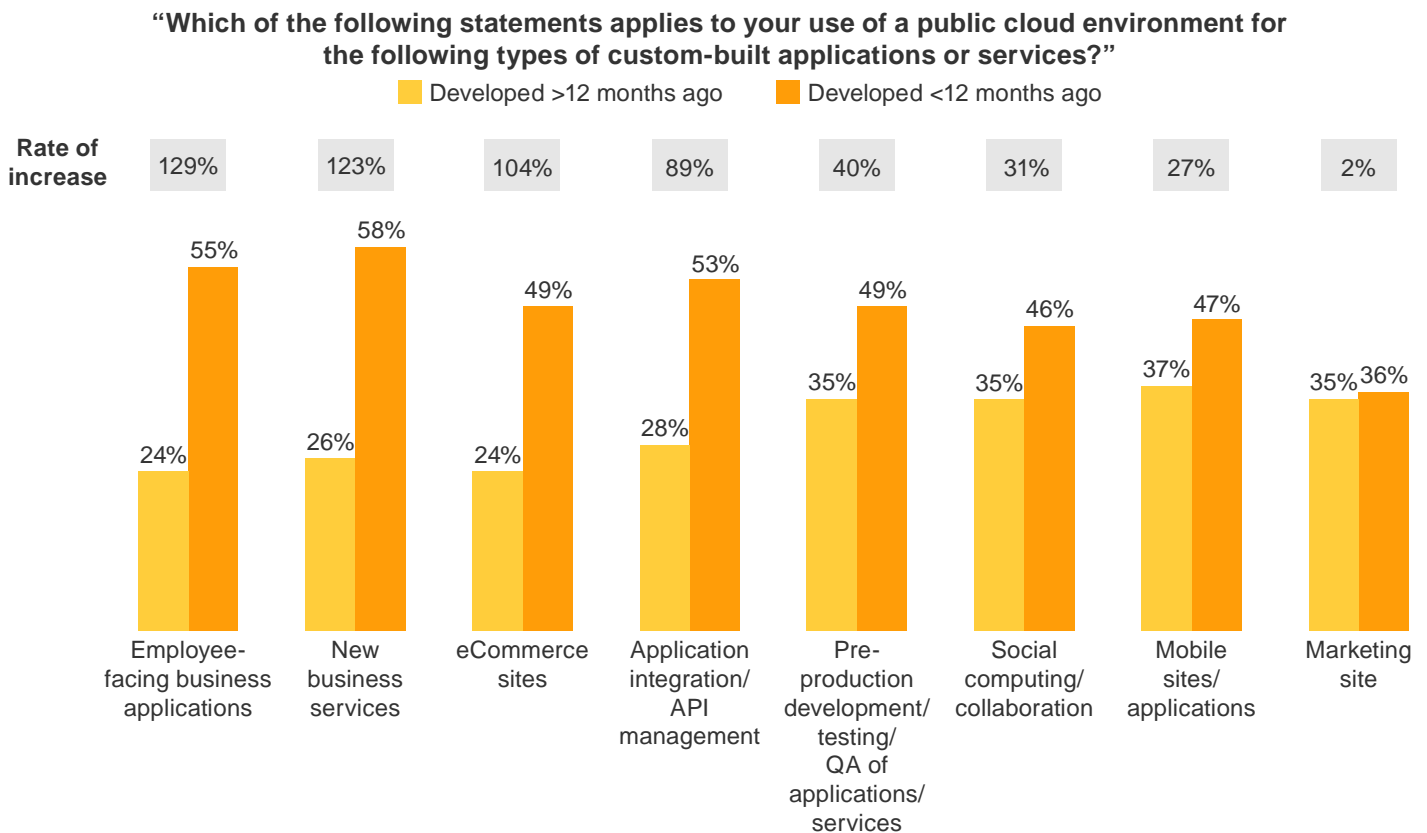
Source: A commissioned study conducted by Forrester Consulting on behalf of New Relic, November 2015

› **Cloud development is accelerating as developers vie to keep up.** The insatiable corporate appetite for custom software has developers turning en masse to solutions that provide on-demand elasticity, agility, and cost efficiency. Enter cloud development — the use of on-demand, self-provisioned infrastructure, platform, and software services to facilitate the deployment of applications without acquiring and managing underlying hardware. An average of only 30% of developers we surveyed reported that they had developed one of eight cloud application types we asked about over a year ago. The proportion of those developers that developed in the cloud within the past year, however, is 63% higher, or

nearly half of developers surveyed. The strongest gains were in both systems of engagement (e.g., new business services and eCommerce sites, whose respective rates of cloud development rose by 123% and 104%) and systems of record (e.g., employee-facing business applications, which saw a 129% jump in cloud development) (see Figure 2). Our survey also suggests that this trend is still accelerating: An average of only 6% of respondents have no plans to develop a given custom-built application type in the cloud.

**FIGURE 2**

**Custom Software Development Has Boomed**



Base: 101 application development and software architecture professionals at US enterprises

Source: A commissioned study conducted by Forrester Consulting on behalf of New Relic, November 2015

## Security Trepidations Curb Cloud Development's Potential

While cloud platforms and tools — along with supporting DevOps methodologies — are increasingly popular with developers, teams struggle to employ these technologies to their full potential. A familiar litany of inhibitors to cloud development include budget constraints, insufficient infrastructure, and procurement rules. But one inhibitor stands out among the rest: security concerns.

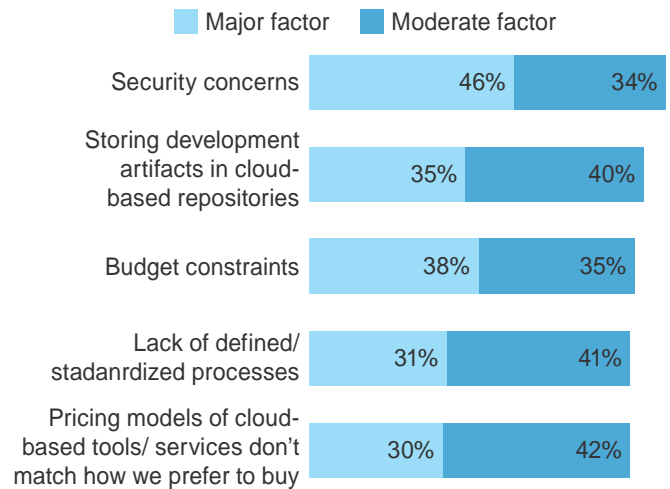
In the context of high-profile breaches, increasingly targeted attacks, and amplified awareness of vulnerabilities, security professionals and developers alike have apprehensions of how new technologies such as cloud development platforms and tools — along with the multitude of applications they produce — can expose them to malicious actors. But to what extent are security concerns restricting cloud development's rise, and how well are developers and security professionals working together to overcome this challenge? Our study found that:

- Security outshadows all other cloud development inhibitors.** Nearly nine in 10 developers we surveyed (87%) reported a recent increase in the importance of security concerns within the development cycle. These developers also cited security concerns as the greatest inhibitor of cloud/software-as-a-service (SaaS)-based software development at their organizations, outranking factors such as insufficient storage capabilities, slim budgets, and unattractive pricing models. What's more, security is one of only two cloud-development inhibitors these developers were more likely to rate as "major" rather than "moderate" (see Figure 3).
- Misaligned security perceptions highlight the need for cross-functional collaboration.** The developers we surveyed correctly believed their security colleagues would have at least moderate levels of concern regarding various cloud development security considerations. However, security colleagues are more concerned about cloud development than the developers perceived. On average, 40% of developers designated a given security concern as "major," while 43% designated it as "moderate." But security professionals were more likely to deem a concern as "major" (47%) and less likely to call it "moderate" (36%). Developers also incorrectly perceived security professionals' rankings of concerns. Developers believed, for instance, that encryption of customer and private data in the cloud would rank at the bottom of the

FIGURE 3

### Security Concerns Lead The Factors That Slow Cloud Development's Rise

**"To what degree do the following factors inhibit public cloud/SaaS-based software development at your organization?"**  
(Top five concerns shown)



Base: 151 IT security, application development, and software architecture professionals at US enterprises

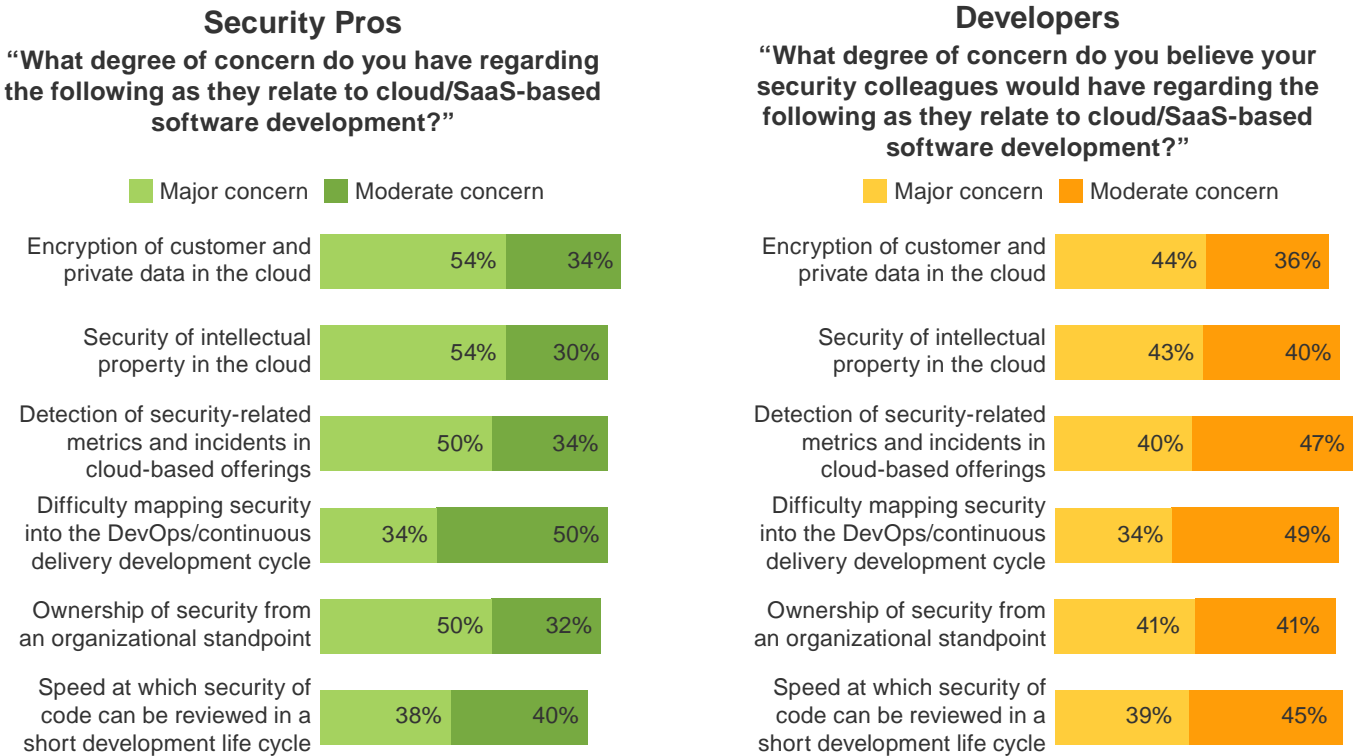
Source: A commissioned study conducted by Forrester Consulting on behalf of New Relic, November 2015

list, when security professionals put it at the top. Developers also predicted the speed at which code can be reviewed for security to rank as the No. 2 concern. However, this is the least of security professionals' cloud development concerns (see Figure 4).

- Despite consensus on its benefit, collaboration is haphazard.** The gap between development and security priorities and perceptions is exacerbated by how little these professionals work together. Only half (52%) of the developer and security professionals we surveyed regularly work together on tasks like code reviews, threat modeling, security assessments, security reviews, and the development of security requirements or incident response plans. A small minority (19%) of these professionals said they always perform these tasks in tandem. Despite a lack of embedded collaboration in practice, the vast majority said collaborating is important: An average of 89% of respondents described collaboration on these tasks as having at least "moderate" value, with the majority of these respondents (56%) describing the value as "major."

FIGURE 4

## Misaligned Security Concerns Underscore The Need For Collaboration



Base: 51 IT security professionals and 101 application development and software architecture professionals at US enterprises

Source: A commissioned study conducted by Forrester Consulting on behalf of New Relic, November 2015

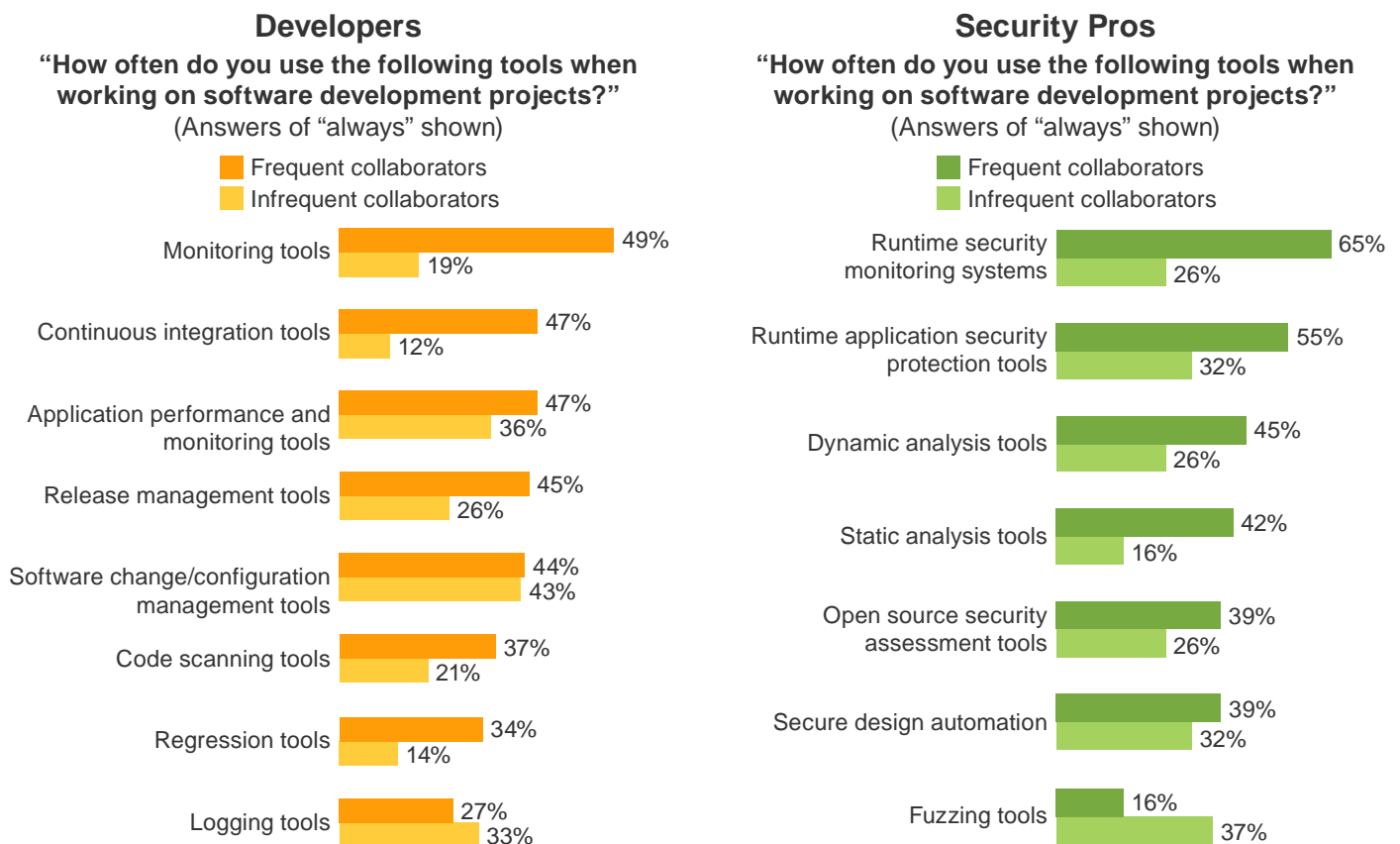
- Embedded collaboration yields greater benefits.** The vast majority of all respondents view collaboration between developers and security professionals as valuable. However, the differences in the *degree* of value these respondents gain illustrate the importance of embedding such collaboration in cloud software development workflows. “Frequent collaborators” (defined as those who “always” or “often” collaborate with their counterparts on at least half of the security-related software development tasks we asked about) were 63% more likely than infrequent collaborators to describe their cross-functional interactions as “very valuable.” This trend was consistent across each of the collaborative tasks we asked about, with frequent collaborators most likely to experience the greatest value from fuzz testing, static analysis, applying secure design, and performing security and privacy assessments.

## Cloud Development Tools Power Cross-Functional Collaboration To Produce Quality Software

Collaboration between developers and their security colleagues is critical for successful cloud development. But with so many teams lacking embedded collaboration, there is clearly room for improvement. What can organizations do to empower developers and security professionals, and how can firms expect to benefit, exactly? Our analysis revealed some interesting insights:

- › **The right kind of collaboration requires the right kinds of tools.** Tools provide hard data that both developers and security pros can rally around, and they also reduce manual work so that teams can focus on more important tasks. It follows logically that, on average, developers who frequently collaborate are twice as likely than infrequently collaborating developers to always use any one of eight development tools, including monitoring, continuous integration, and application performance and monitoring tools. Similarly, security professionals who frequently collaborate are much (176%) more likely than infrequent collaborators to always use a given security tool on software development projects, and are most likely to have runtime security monitoring systems, runtime application security protection, and dynamic analysis tools at their disposal (see Figure 5).

**FIGURE 5**  
Frequent Collaborators Rely On Various Software Development And Security Tools



Base: 101 application development and software architecture professionals and 51 IT security professionals at US enterprises

Source: A commissioned study conducted by Forrester Consulting on behalf of New Relic, November 2015



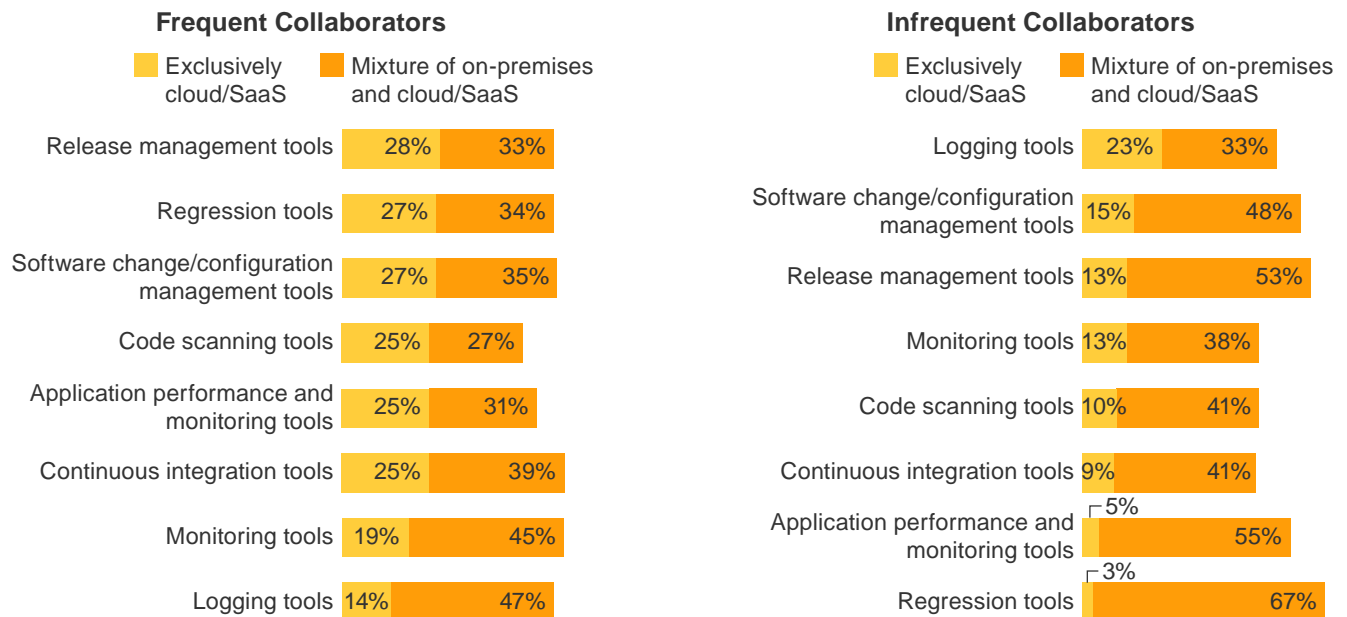
› **Frequent collaborators turn to cloud development tools.** All of the developers we surveyed, regardless of whether or not they frequently collaborate with security colleagues, are similarly likely to have deployed at least some of their software development tools in the cloud. On average, 60% of frequent collaborators have at least supplemented a given tool with SaaS, while 58% of infrequent collaborators have done the same. But the greater degree to which teams utilize cloud-based tools and services, the more they can reduce management and configuration tasks, thereby closing the distance between production and development instances and fostering collaboration. Indeed, frequent collaborators are 216% more likely to have shifted a given tool to an exclusive SaaS or cloud-based model, with particularly high enthusiasm for cloud/SaaS-based release management, regression, and software change or configuration management tools (see Figure 6).

› **Cloud development tool service providers instill cross-functional trust.** Nearly all frequent collaborators (97%) and the vast majority of infrequent collaborators (85%) have at least moderate confidence in the security claims of cloud/SaaS-based software development tool service providers. Frequent collaborators, however, are much more likely to rate that confidence as “very confident” (68%) compared with infrequent collaborators (49%), suggesting that tool usage combined with collaboration instills a level of assurance not evident in less evolved teams. What’s more, the rates at which developers and security professionals are “very confident” in these claims (61% and 58%, respectively) are statistically identical, and not a single security professional in our survey indicated being “not at all confident.” In other words, cloud development tools calm the nerves of even those IT pros whose job it is to be paranoid.

**FIGURE 6**

**Frequent Collaborators Have Embraced Cloud Development Tools**

“Please indicate your organization’s deployment model for the following software development tools.”



Base: 101 application development and software architecture professionals at US enterprises

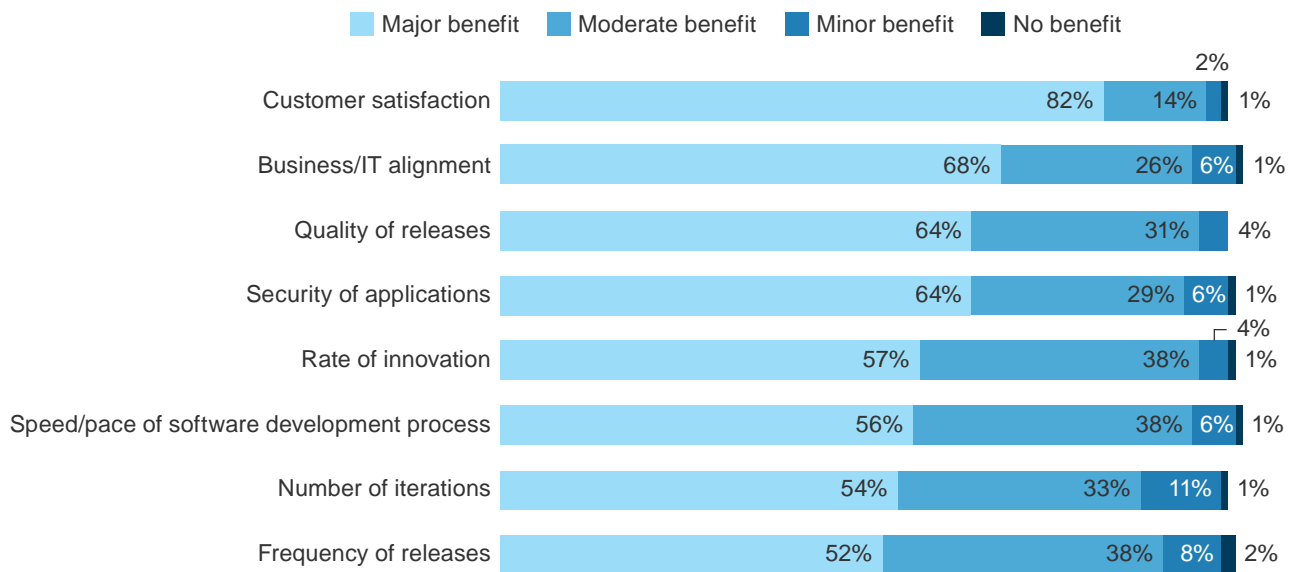
Source: A commissioned study conducted by Forrester Consulting on behalf of New Relic, November 2015

› **Embedded collaboration — powered by the right tools — drives business and customer value.** In the end, investing in the resources required to embed developer/security collaboration into development flow must yield tangible, measureable value. According to the frequent collaborators in our survey, their investment is well worth it. The majority of these respondents credit embedded collaboration with major benefits for each of the eight metrics we asked about, including business/IT alignment, release quality and frequency, application security, and their firms' rate of innovation. Most critical, however, is the whopping 82% of frequent collaborators who cited major improvement to customer satisfaction — a key bellwether of success in this venerable age of the customer (see Figure 7).

**FIGURE 7**

**Engrained Collaboration Yields Tangible Business And Technical Results**

**“What degree of benefit to the following do you attribute to your collaboration with your [developer/security] colleagues?”**



Base: 90 frequently-collaborating IT security, application development, and software architecture professionals at US enterprises (percentages may not total 100 because of rounding)

Source: A commissioned study conducted by Forrester Consulting on behalf of New Relic, November 2015

## Key Recommendations

Forrester's in-depth survey of application development, software architecture, and IT security decision-makers yielded several important recommendations:

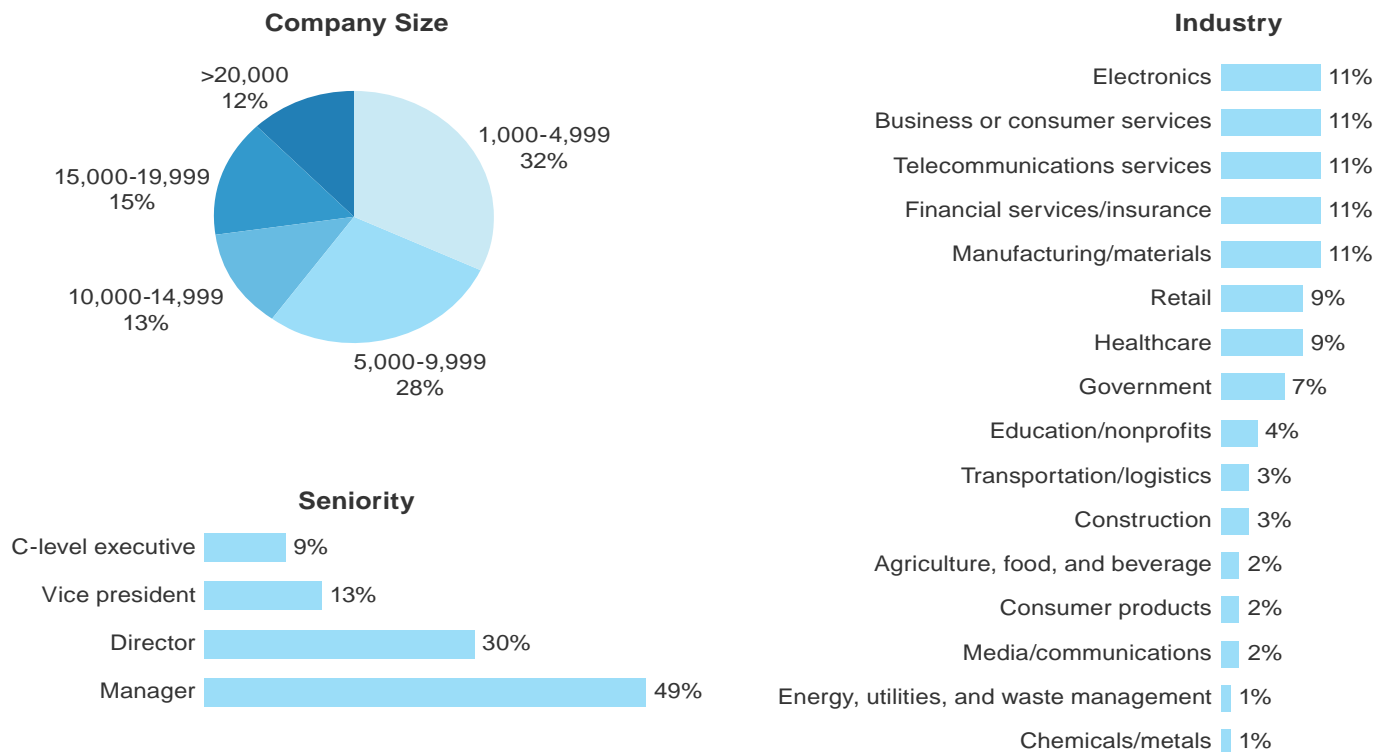
- › **Align organizational goals by understanding each other's value.** The first step in fostering embedded collaboration is to align goals of disparate teams. This alignment starts with a better understanding of the other team's objectives and concerns. While optimism is a developer trait, especially for forward-looking innovators, developers are behind the curve when it comes to changes in privacy regulations, policies, and attitudes, as illustrated by their misperceptions of security priorities. Development teams should incorporate an ethos that embraces security teams' know-how and points of view. Likewise, security teams must internalize the criticality of new technologies and work with developers to minimize risk while still fostering innovation to help win, serve, and retain customers.
- › **Retire fear of the unknown with real experience.** New development technologies elicit a predictable response of fear, uncertainty, and doubt. Over the past 10 years, we've seen security become a top concern for open source software, mobile development, and now cloud development. But over time, fear of the unknown is replaced by accurate identification of risk and appropriate countermeasures. The pathway to a proper balance of risk and reward is measured exposure and experience with new software technologies. It's apparent from our survey that security concerns are not stopping the adoption of cloud technology; therefore, leaders who wait to adopt cloud turn into laggards, creating a different type of business risk.
- › **Embed cross-role collaboration processes driven by real data.** Increasing the velocity of custom software delivery requires optimizing the rate of flow throughout design, development, testing, and deployment. Separate role-aligned centers of excellence impede this flow, so teams should embed designers and testers in addition to developers and security professionals. Charge these cross-functional teams to make data-based decisions when deploying new features, evaluating system quality and security, and identification of risks.
- › **Extend collaboration beyond developers and security pros.** While effective collaboration between security and development is a good start, it shouldn't be done in a silo. In particular, it makes sense to include infrastructure and operations professionals in the conversation, especially where development teams are already embracing DevOps tactics to speed delivery. Align individual metrics around a shared goal: rapid delivery of high-quality, secure, and stable software.

## Appendix A: Methodology

In this study, Forrester conducted an online survey of 151 application developers and IT security professionals at enterprises (companies with at least 1,000 employees) in the United States to evaluate their cross-role collaboration practices, the outcomes of those practices, and the tools and processes they employ to enable collaboration. Questions provided to the participants asked about their experience with cloud development, their security concerns pertaining to cloud development, and the extent to which they deploy supporting tools in the cloud. Respondents were offered small incentives, determined and administered by their survey panels, as a thank you for time spent on the survey. The study began in October 2015 and was completed in November 2015.

## Appendix B: Respondent Demographics

**FIGURE 8**  
Respondent Demographics



Base: 151 IT security, application development, and software architecture professionals at US enterprises (percentages may not total 100 because of rounding)

Source: A commissioned study conducted by Forrester Consulting on behalf of New Relic, November 2015

## Appendix C: Endnotes

<sup>1</sup> This phrase was first coined in 2011 by the software developer and venture capitalist Marc Andreessen. Source: Marc Andreessen, "Why Software Is Eating The World," The Wall Street Journal, August 20, 2011 (<http://www.wsj.com/articles/SB10001424053111903480904576512250915629460>).