

The State of Application Development

2018 How IT Is Responding to Digital
Disruption and Innovation
GLOBAL



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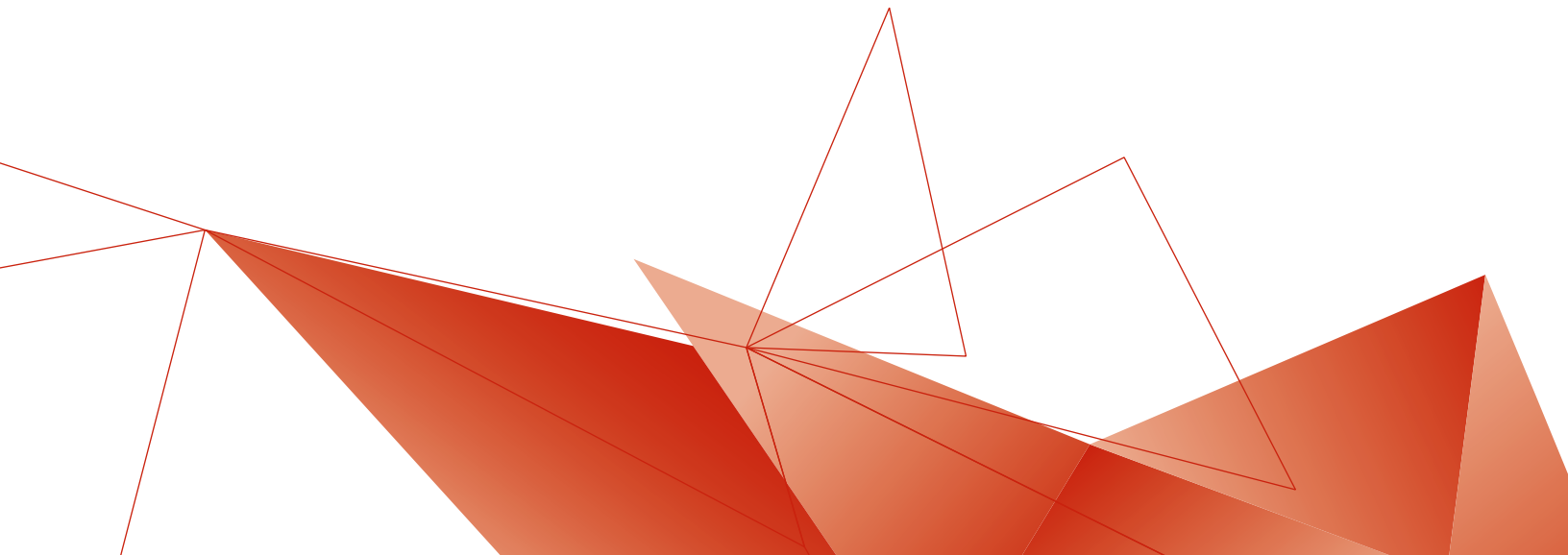
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Executive Summary

The need for digital transformation dominates business strategy today, and there are two obvious consequences for IT. Demand for application development is at an all-time high, and speed and agility are more important than ever before.

As aptly put by Forrester Research, today **“every company is in the software business.”**¹ Also, fast iterative delivery of high-quality software is the name of the game. If you’re in any doubt about these claims, then consider this. The average tenure of companies in the S&P 500 has plummeted from 60 years to less than 20 years since the 1950s and is forecast to be just 12 years a decade from now.

In a world that is changing at breakneck speed, the ability to identify and respond to digital innovation opportunities more quickly than your competitors will determine if your company sinks or swims.

Every company is in the software business because innovation and differentiation don’t come from neatly packaged off-the-shelf solutions. And, if you want to get to market first, you need the courage for high-speed experimentation. This is no place for glacial, multi-month ERP-style projects.

This is the backdrop to our fifth annual survey of IT professionals as we seek to understand the state of application development better. We set out with five critical questions in mind:

- 1 How are organizations’ app dev priorities adjusting to this digital age?
- 2 What are the main challenges to meeting app dev goals?
- 3 What strategies are IT teams employing to increase app dev capacity and speed?
- 4 Are these strategies working to overcome resource constraints, and reduce backlogs?
- 5 Are new app dev practices such as low-code and citizen development making a difference?

Our research took us around the world, connecting us with more than 3,500 IT professionals in all kinds of industries and from over 116 countries. Our insights from that research are captured in the pages that follow.

1. Forrester—Predictions 2018: New Technologies Propel Software Development

Key Findings

Demand for App Dev at All-Time High

The number of applications slated for delivery in 2018 is higher than ever. Forty-two percent of IT professionals said they had plans to deliver 10 or more apps, 21% plan to deliver 25 or more apps, and 10% said they plan to deliver 100 or more apps in 2018.

Excessive Development Time

Forty-seven percent of respondents said the average time to deliver a web or mobile application is five months or more. Twenty-eight percent described their organization as unhappy or somewhat unhappy with the speed of application delivery.

Backlogs Remain Stubbornly High

Sixty-five percent of IT professionals said they have an app dev backlog, and for 10% of these respondents, the backlog was more than 10 apps. Only 32% said their app dev backlog had improved in the last year.

Development Skills Are Hard to Hire

Sixty-five percent of organizations have hired web or mobile developers in the past year. Eighty percent of respondents described app dev talent as scarce, with hiring taking longer and costing more.

Slow Returns From Agile and DevOps Investments

To increase application delivery, organizations are investing in multiple tools and approaches. Sixty percent of organizations have invested in agile tools and services in the past year. But, the average agile maturity score was a lackluster 2.6 out of 5.

Forty percent of organizations have invested in DevOps tools and services during the past year. However, they typically described their DevOps maturity as somewhere between **“Just Starting”** and **“Fundamental.”**

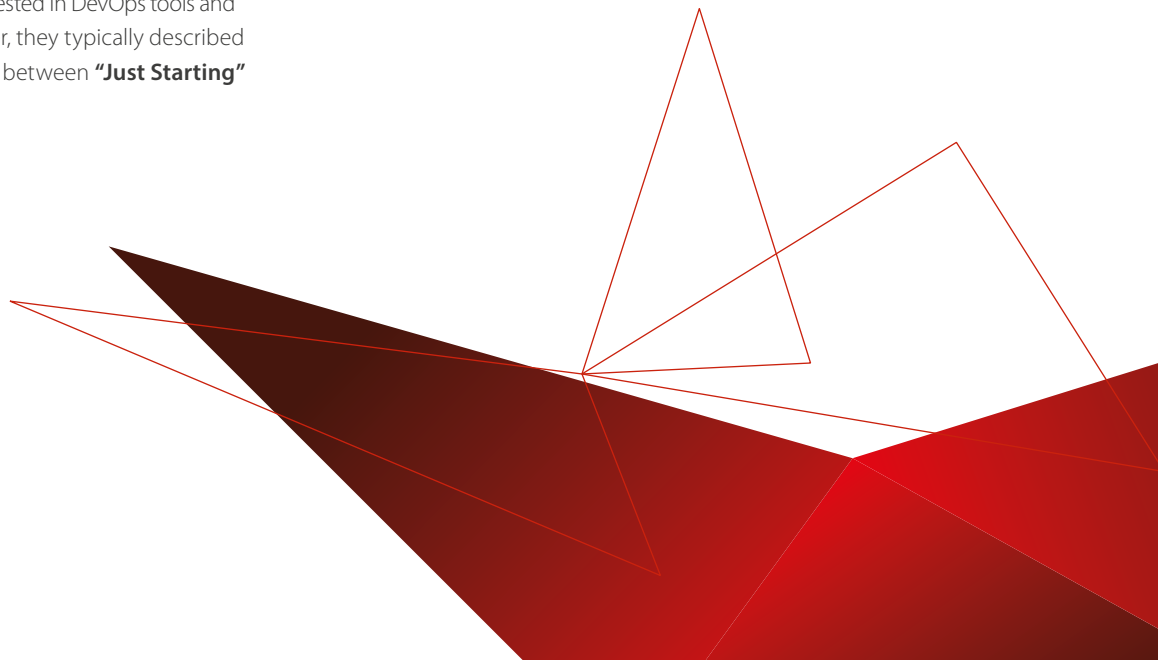
Customer-Centricity Is on the Rise

Fifty-two percent of organizations have invested in customer-centric practices in the past year, including customer journey mapping (16%), design thinking (27%), and lean UX (9%). For the new apps slated for development in 2018, those that will be used directly by customers or business partners are most important, outscoring apps for internal use by 14%.

Low-Code Is Becoming Mainstream

Low-code is no longer just for innovators and early adopters. Thirty-four percent of respondents said their organization was already using a low-code platform, and a further 9% said they were about to start using one. If this is representative of the whole market, then low-code has crossed the chasm and is well on the way to widespread adoption by the “early majority.”

As nearly a third of respondents are using a low-code platform, throughout this report, we have sought to illustrate whether or not low-code is “moving the dial” for those who have adopted it.



Survey Demographics

In March 2018, we surveyed more than 3,500 IT professionals from over 116 different countries.

It's important to note that the survey was promoted primarily to non-customers to ensure we surveyed a broad cross-section of organizations "outside of the OutSystems camp." To achieve this, we promoted the survey via third-party publications.

Roles

Respondents were developers, CIOs, IT managers, and other professionals, representing thousands of companies from around the world, who agreed to share objective feedback based on their experiences.

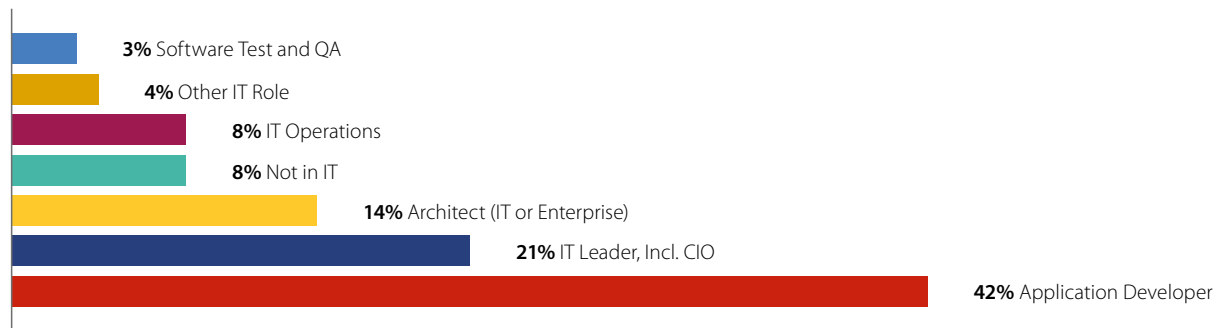


Fig. 1: Primary Job Function

Geography

Europe accounted for 41% of the responses. Roughly two-thirds of organizations have headquarters in either Europe or North America, 18% in Asia and the Pacific, and the remainder spread across the rest of the world.

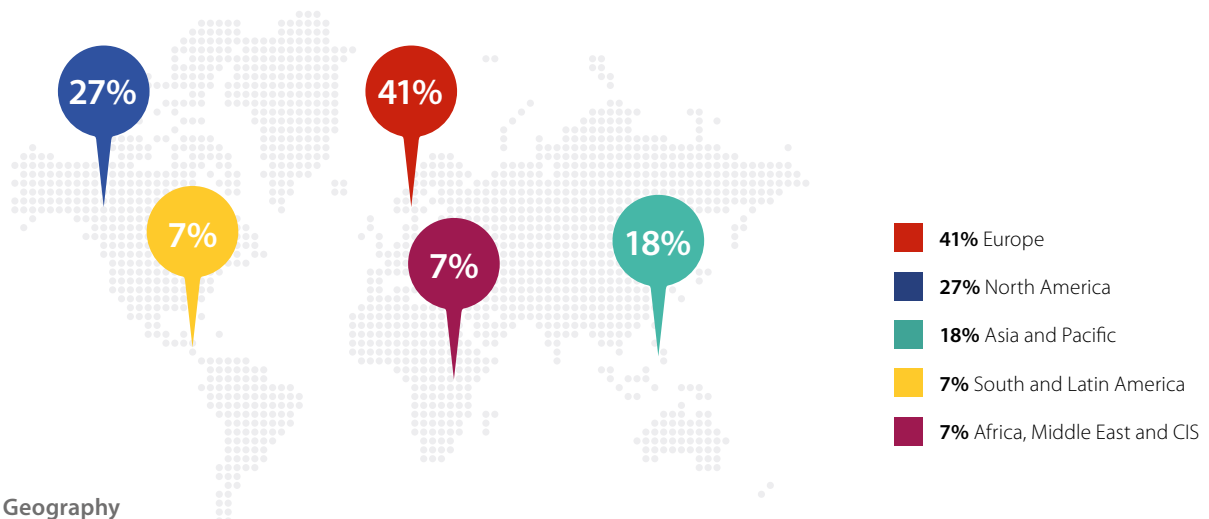


Fig. 2: Geography

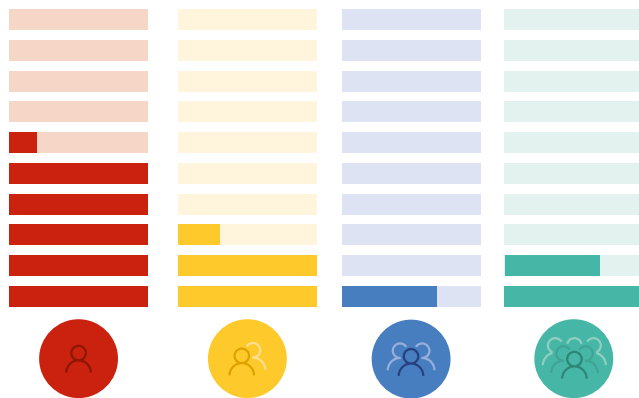


Fig. 3: Company Size

Size of Organization

Responses came from organizations of all sizes, approximately half with over 500 employees and one in six came from organizations with more than 10,000 employees.

- 52% < 500 Employees
- 24% 500-4,999 Employees
- 7% 5,000-10,000 Employees
- 17% > 10,000 Employees

Industries

All industries were represented in the survey, the top six being technology (including telecommunications, internet, and electronics), finance and financial services, government and education, healthcare and pharmaceuticals, business support and logistics, and insurance.

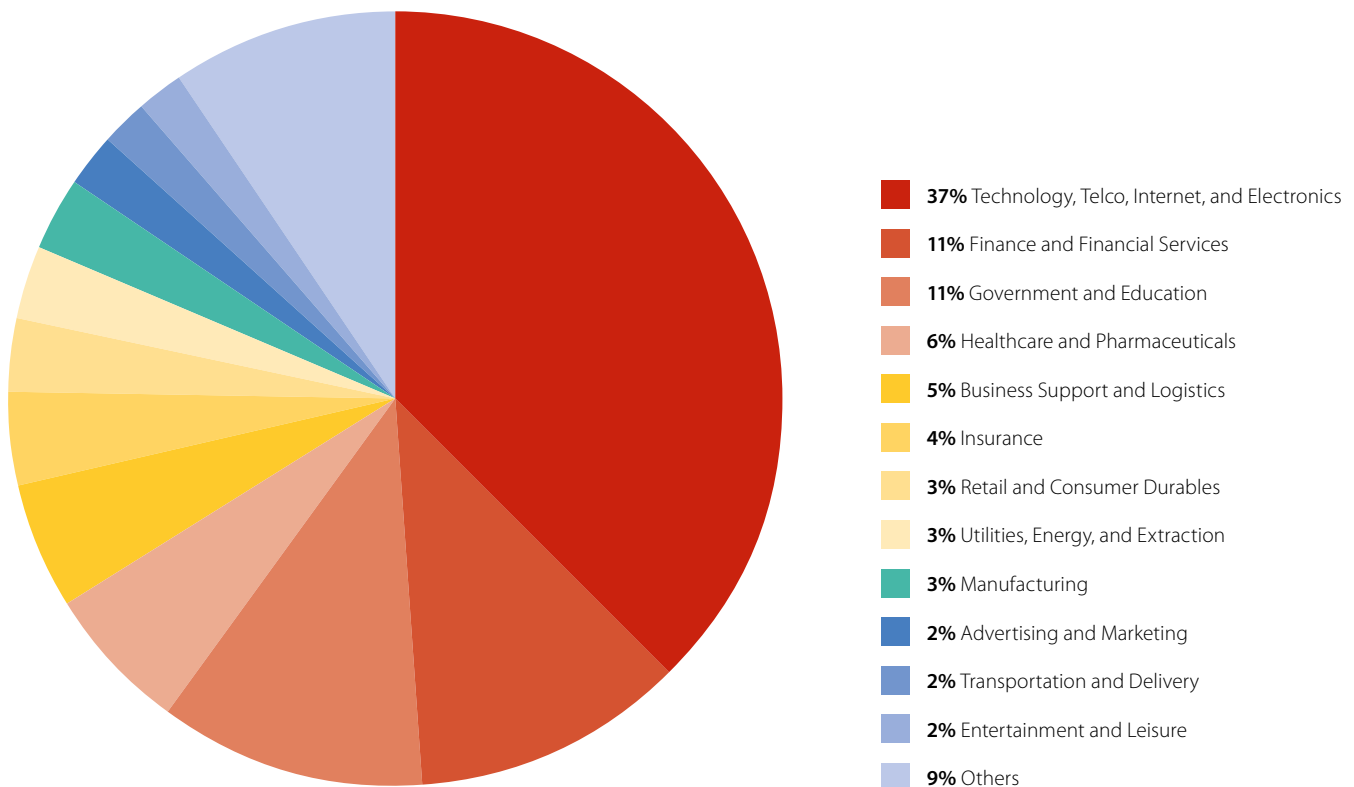


Fig. 4: Industry

More demographics and fun findings are in the appendix.

The Challenges of Application Development

The responses to questions about the number of apps in the pipeline, maintenance, backlogs, and more revealed a great deal about the barriers and issues that affect application development.

The Relentless Demand for Custom Applications

Fueled by digital innovation and differentiation initiatives, demand for application development seems higher than ever. Focusing on organizations with 500 or more employees, we found 42% have 10 or more apps planned for delivery in 2018. Twenty-one percent have 25 or more apps planned in 2018.

Larger companies tended to have even more ambitious targets. Thirteen percent of companies with over 10,000 employees said they planned to develop 100 or more apps in 2018, compared to just 8% of companies with between 500 and 5,000 employees.

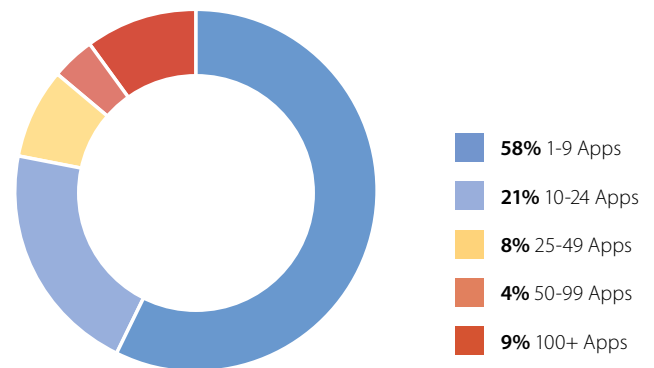


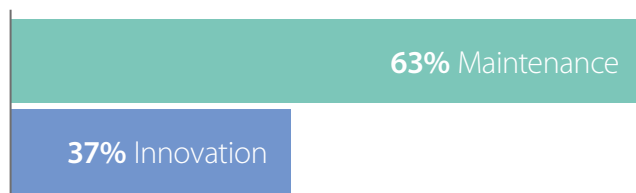
Fig. 5: Applications Planned for Development

Innovation vs. Maintenance

As shown in Table 1, of all these apps slated for development, the majority are replacements for or updates to applications that already exist rather than innovative (net new) apps.

Question	Answer Option	Response
Roughly what percentage of the applications you will develop in 2018 are new innovation, rather than replacing and updating applications that you already have?	Innovation less than 25% of all apps	40%
	Innovation 26%-50% of all apps	32%
	Innovation 51%-75% of all apps	15%
	Innovation over 75% of all apps	13%

Table 1: Innovation vs. Maintenance Responses



The overall split is estimated to be about 37% innovation and 63% maintenance. This estimate serves as a useful reminder that mature IT departments typically have to devote around 75% of their resources on “keeping the lights on” and not innovation.

Fig. 6: Estimated Split of App Dev Projects

Types of App to be Delivered in 2018

We asked respondents to describe the two most important types of application that they would develop in 2018. In first place came **apps that are used directly by customers or business partners** (66%). **Apps that support internal processes, operations including analytics** came second (52%). All responses are shown in Fig. 7. Responses for “Other” varied considerably. Blockchain, security, and apps that would be sold to customers were among them.

Participants could select one or two options. Most selected two, which is why the total is 181% rather than 200%.

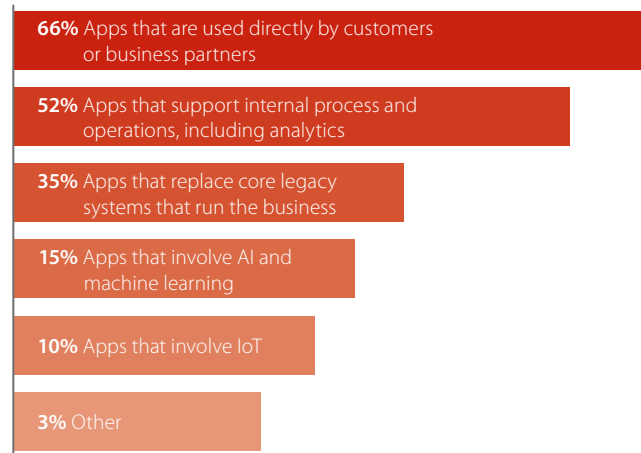


Fig. 7: Two Most Important Types of App Dev Projects

Development Times Are Long

We asked respondents how happy they felt their organization was with the speed of application delivery. Overall, 19% thought their organization was happy, and another 22% said somewhat happy. Correspondingly, 59% of organizations were either unhappy, somewhat unhappy, or neutral.

We segmented responses to see if the use of low-code had a bearing on satisfaction with delivery speed. This revealed a significant difference. Of the respondents who were using low-code, 21% more believed their organizations are either happy or somewhat happy with application delivery speed, compared to organizations that are not yet using low-code.

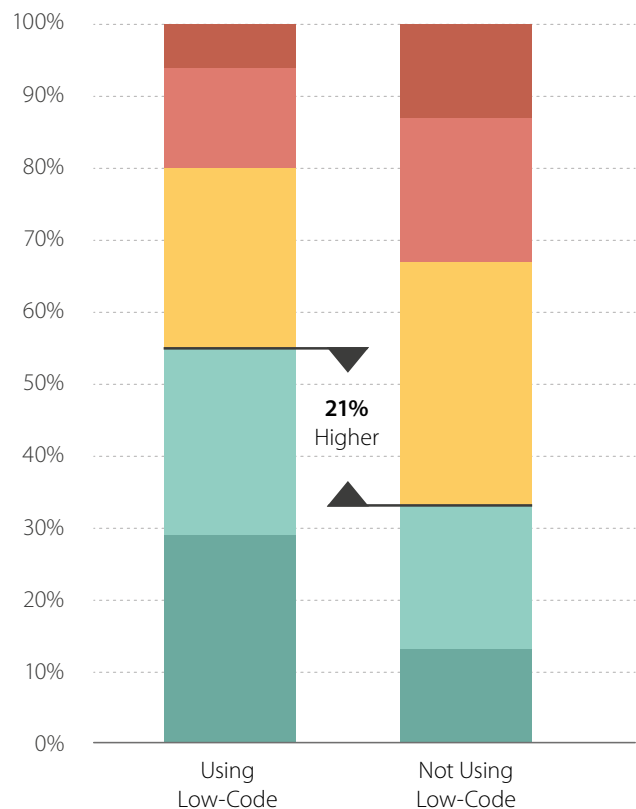


Fig. 8: Satisfaction With the Speed of Application Delivery

Similarly, we analyzed how long, on average, it takes organizations to deliver new applications.

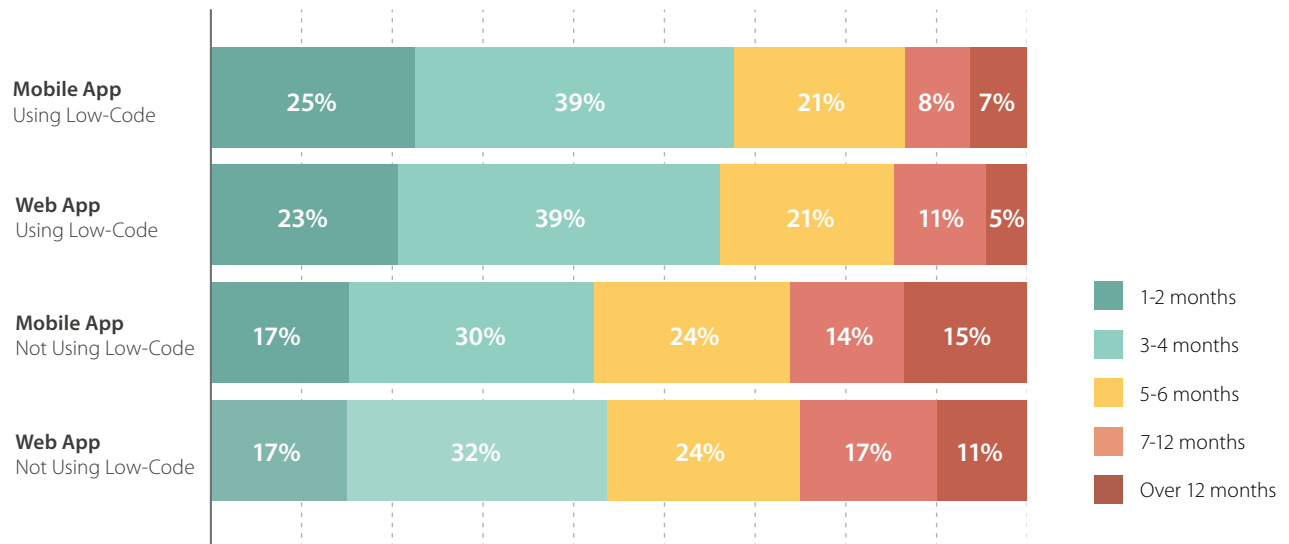


Fig. 9: Application Development Time

As shown in Fig. 9, there was a very close correlation between web and mobile development times. Respondents said mobile apps take slightly longer than web apps. What is also apparent is that respondents who are using low-code consistently report faster delivery speeds.

This is thrown into sharp contrast when we focus just on respondents who said average app delivery time was between one to four months.

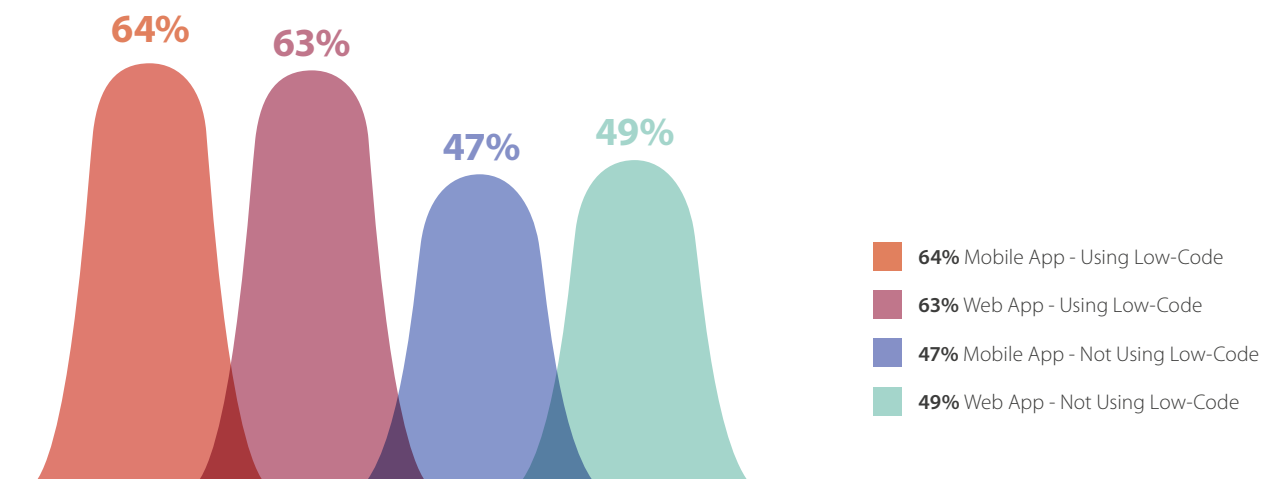


Fig. 10: Average App Delivery Time of Four Months or Less

Averaging across web and mobile app delivery, 63% of low-code users say that they can deliver apps in four months or less, compared to just 49% of respondents not using low-code, a 15% advantage for low-code users. Correspondingly, as shown in Fig. 9, those who did not use low-code were just over twice as likely to report average app delivery times of over 12 months as those who did.

In Search of Speed

All organizations are seeking to continuously improve the efficiency, speed, and quality of software delivery. We wanted to find out what approaches and technologies (aimed at increasing capacity), organizations had invested in over the past year. So, we listed popular approaches and gave respondents the option of selecting multiple answers.

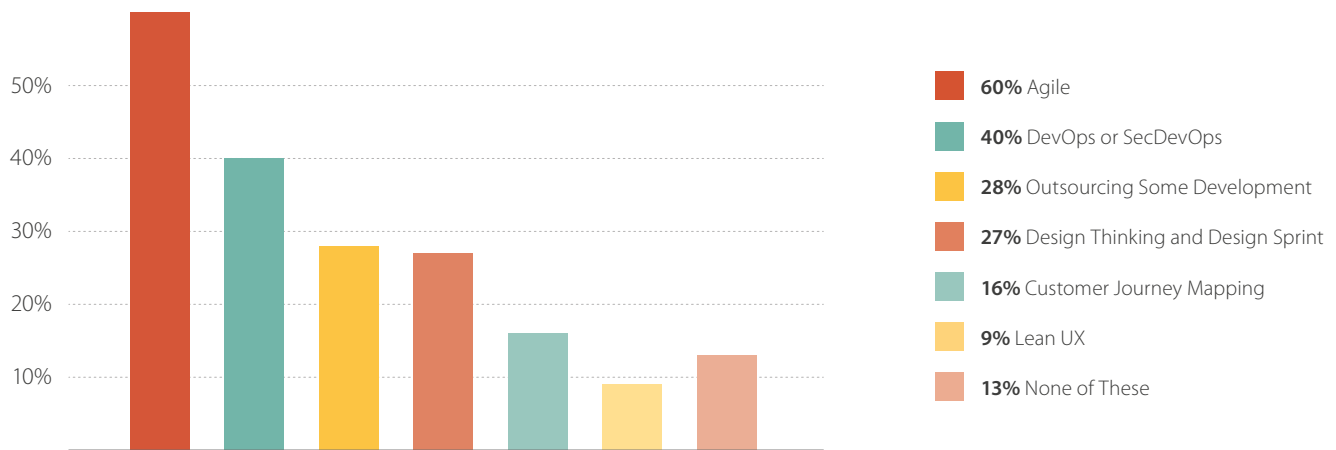


Fig. 11: Investments in Approaches to Speed Up Application Delivery

Technology to Speed Up Application Delivery

We asked what technology organizations had invested in over the past year to increase the speed of application delivery. Respondents could select multiple options. Overall, 77% of organizations had invested in the cloud, 31% in low-code, and both mobile application development platforms and new languages and frameworks scored 26%.

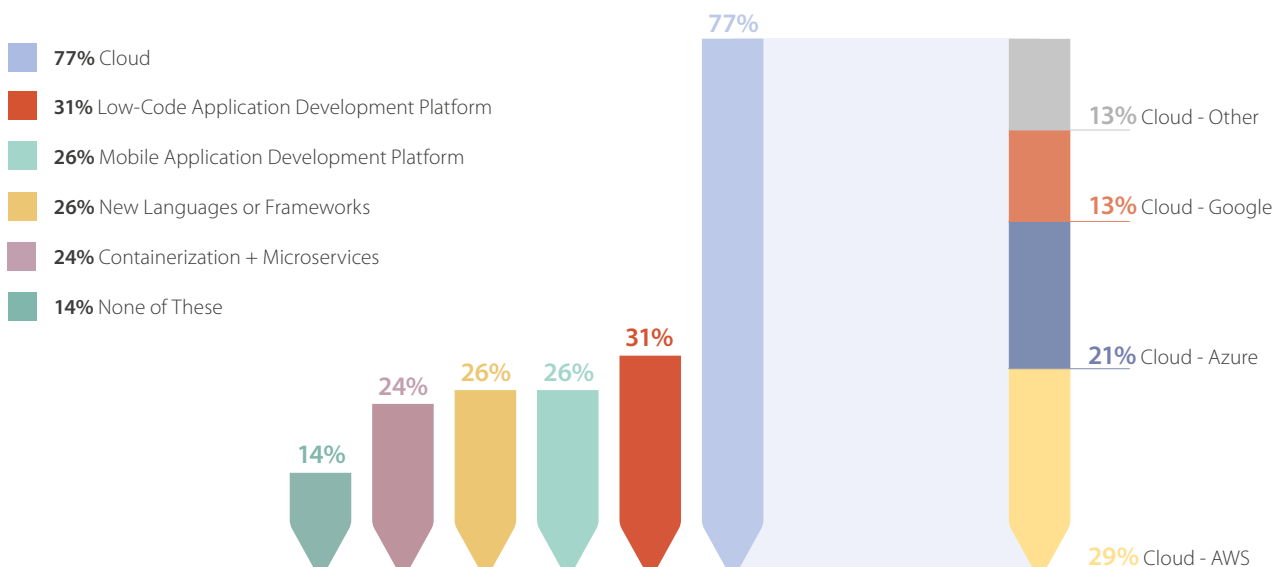
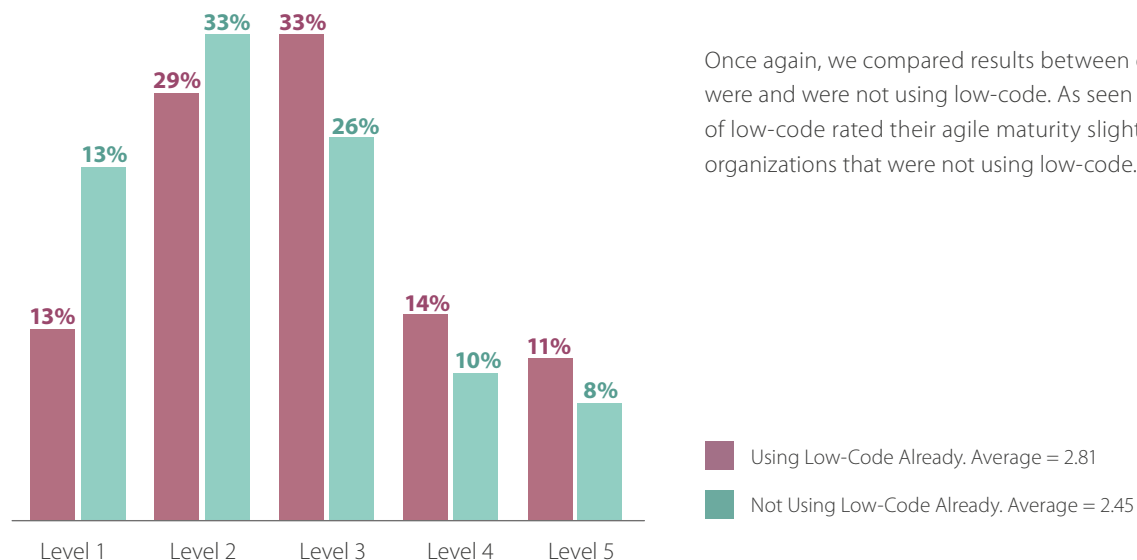


Fig. 12: Investments in Technology to Speed Up Application Delivery

Agile Maturity

We wanted not only to understand whether organizations were investing in agile, but also to gauge the progress of these practices. So, we asked respondents to assess their level of agile adoption using this five-level maturity model.

Agile Maturity Model	
Level 1	Initial: We lack consistency and need training to get everyone aligned.
Level 2	Just Started: Processes not fully defined. Basic level of agile adoption. Development and testing are not fully in sync yet.
Level 3	Defined: Our whole team is using well-defined agile processes, and we're consistently delivering sprint after sprint.
Level 4	Measured: We're measuring code quality and other key measures. Our focus is on engineering maturity.
Level 5	Optimizing: We develop on schedule and release on demand. We've invested in automation for continuous integration and deployment. Consistent delivery across teams. Self-organized, sustainable, continuous improvement based on KPIs.



Once again, we compared results between organizations that were and were not using low-code. As seen from Fig. 13, users of low-code rated their agile maturity slightly higher than organizations that were not using low-code.

Fig. 13: Agile Adoption Levels

Adding the three highest maturity levels together revealed an average gap of 15% between the self-assessments of organizations using low-code and those not using low-code.

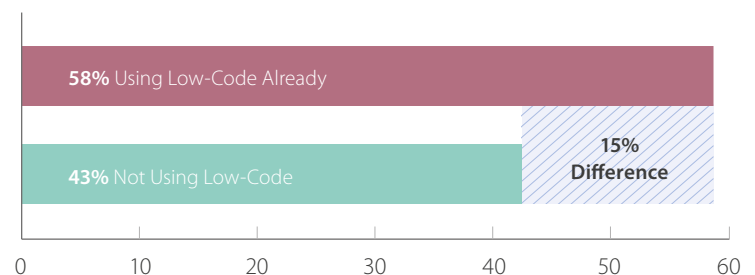
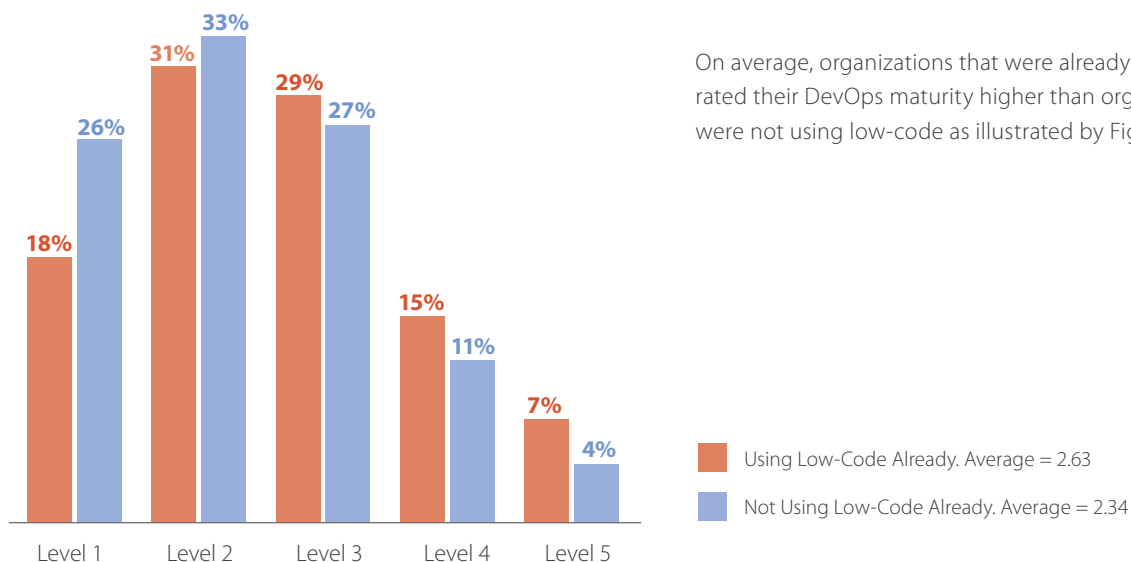


Fig. 14: Combining Levels 3, 4, and 5 of Agile Adoption

DevOps Maturity

We wanted not only to understand whether organizations were investing in DevOps, but also to gauge the progress of these practices. So, we asked respondents to assess their level of DevOps adoption using this five-level maturity model.

DevOps Maturity Model	
Level 1	Not Started: Outages, war-rooms, blame, unplanned work, delays, and defects.
Level 2	Starting: Thinking about cultural change, starting to write scripts, looking at test automation.
Level 3	Fundamental: Automated build, cross-functional teams, product-focused, cultural change is underway.
Level 4	Managed: Happy people, integrated tool chain that preempts failure, automated test and deployment, continuous delivery.
Level 5	Optimizing: DevOps is done, fine-tuned and tied tightly to business goals.



On average, organizations that were already using low-code rated their DevOps maturity higher than organizations that were not using low-code as illustrated by Fig. 15.

Fig. 15: DevOps Adoption Levels

Adding the three highest maturity levels together revealed an average gap of 10% between the self-assessments of organizations using low-code and those not using low-code.

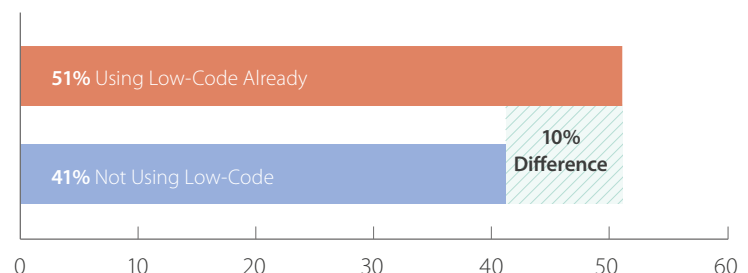


Fig. 16: Combining Levels 3, 4, and 5 of DevOps Adoption

Mid-Sized Organizations Seem to Struggle

We analyzed both agile and DevOps adoption by company size and found the distribution similar for all sizes of organizations except one. Mid-sized organizations (with between 5,000 to 10,000 employees) appear to lag behind their smaller and larger counterparts.

Agile adoption: Mid-sized organizations only scored 13% for level 4 and 5 combined compared to an average of 21% of all other organization sizes.

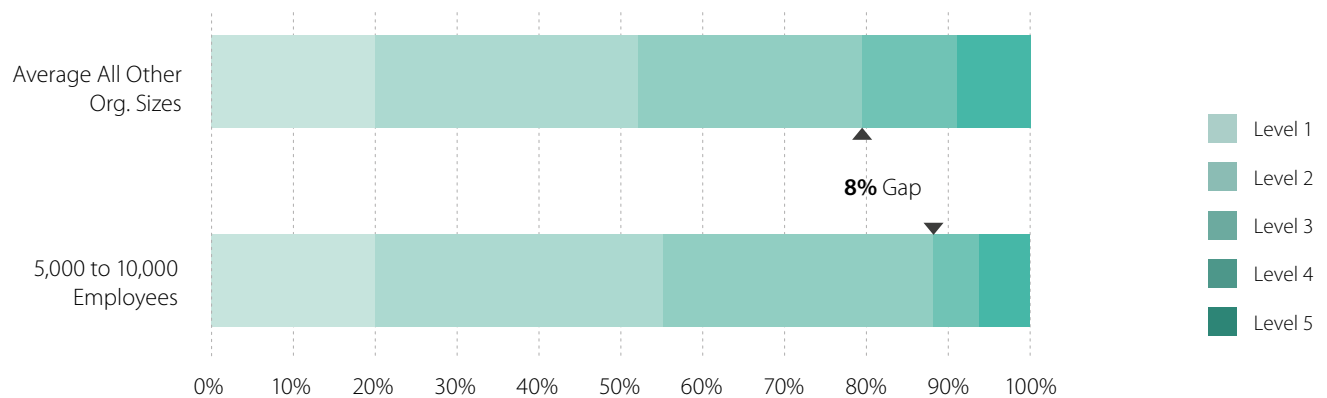


Fig. 17: Agile Adoption in Mid-Sized Organizations

DevOps adoption: We analyzed DevOps maturity for all organizations with over 500 employees, and found the distribution similar for all, except for, once again, mid-sized organizations, which underperformed compared to others. As shown in Fig.18, 6% fewer mid-sized organizations rated themselves above level 3 compared to both larger and smaller organizations.

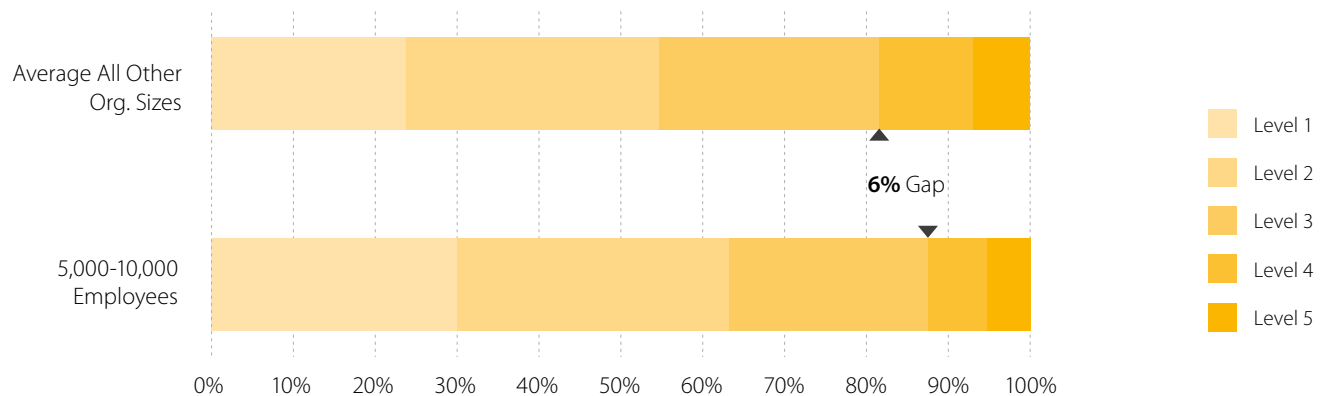


Fig. 18: DevOps Adoption in Mid-Sized Organizations

It appears from this analysis that mid-sized organizations are struggling to mature their agile and DevOps practices compared to smaller and larger organizations. Perhaps smaller organizations are more nimble and larger organizations have deeper pockets to invest more aggressively in IT tools, methods, consulting, and training?

Priorities for Improvement

We asked respondents to identify what three changes or improvements (apart from hiring more developers) they would prioritize, to speed up successful delivery of software in their organizations.

Two improvements stood out from the pack. Forty-seven percent of respondents said they want to capture requirements more accurately. And, 43% said they want to improve their use of testing tools and test automation.

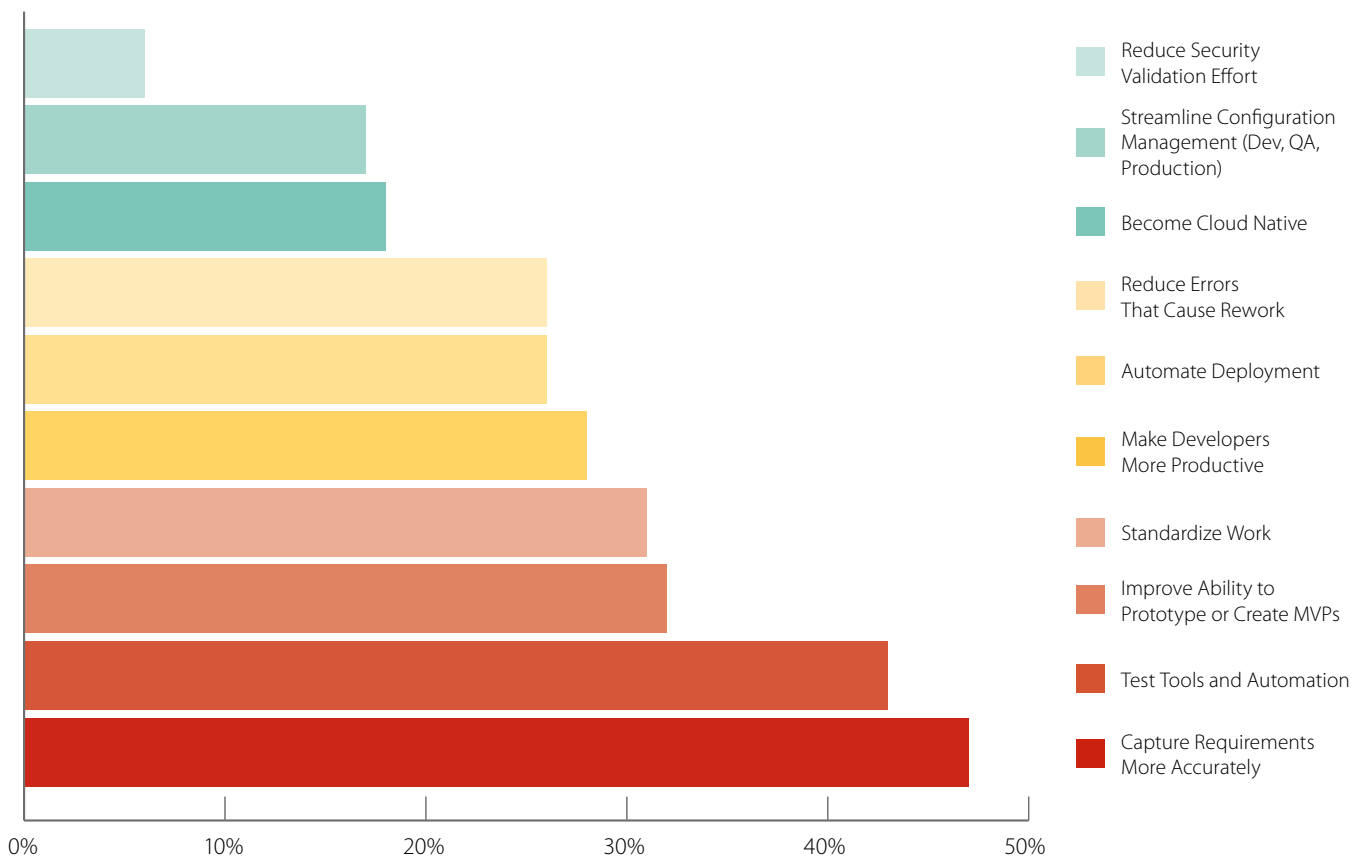


Fig. 19: Top Improvements for Speeding Up Software Delivery

We compared these priorities between users of low-code and those who did not use low-code, and we also compared them based on organization size. Although there was a close correlation on most measures in both sets of comparisons, we found some variances of significance. Organizations without low-code prioritized becoming cloud native and automating deployment more strongly. By contrast, those with low-code prioritized capturing requirements more accurately.

Large organizations prioritized automating deployment and improving their use of test automation tools. Conversely, their smaller counterparts were more interested in standardizing work, improving their ability to prototype, or reducing the effort required for security validation.

Top Challenges That Slow Down App Delivery

We asked what the top challenges are that complicate or delay delivery of web and mobile applications. The top three answers were integration with legacy systems, fuzzy and changing requirements, and the time necessary for testing and QA.

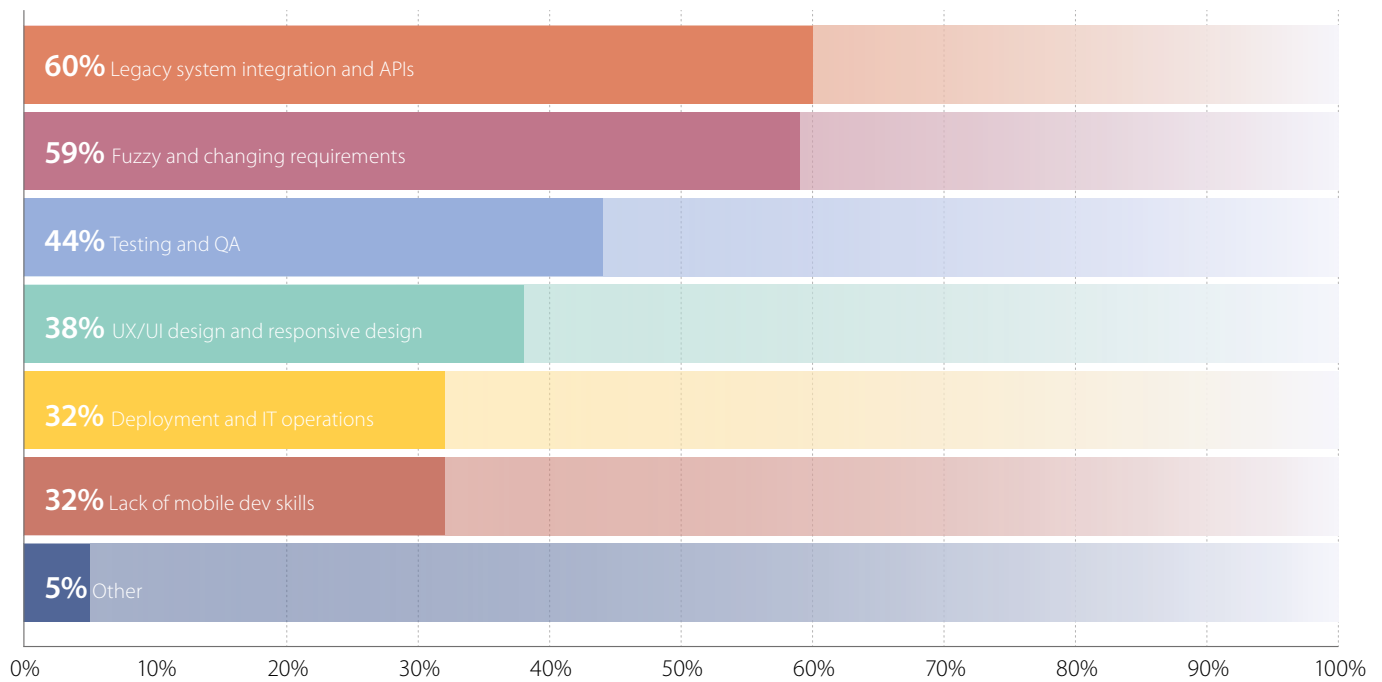


Fig. 20: **Top Causes of Application Delivery Delays**

There was a diverse mixture of other issues; however, the following themes accounted for over 50% of the responses: management weaknesses, project management issues, technical constraints of development tools, skill shortages, lack of business engagement, and security.

Development Backlogs and Resourcing

We wanted to understand whether the backlogs people complained about in last year's survey are getting better or worse and how organizations were sourcing developer talent to keep up with demand.

Size of Development Team

To compare like with like, we asked whether the number of developers employed by organizations was higher, lower, or about the same compared to last year. Only 8% thought their app dev team had shrunk, 38% said their team had grown, and 42% said it was about the same.

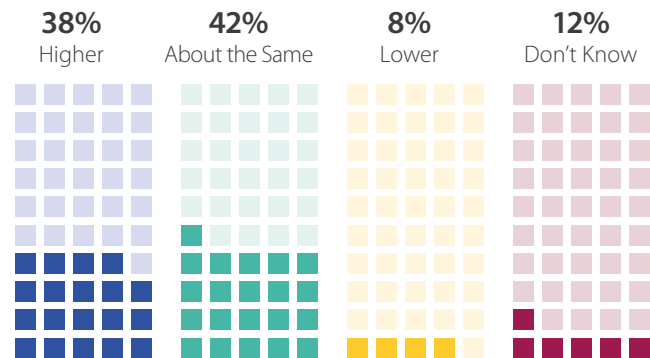


Fig. 21: Developers Employed Compared to Last Year

Backlog of Web and Mobile Development

We asked whether respondents had a backlog of web and mobile projects stacking up because they could not meet the current level of demand. We analyzed responses by company size as shown in Fig. 22.

We found that mid-sized businesses reported a marginally worse backlog. Only 30% said they had no backlog, 53% said they had a backlog of 1-10 applications, and 17% estimated that they had more than 10 applications in their backlog.

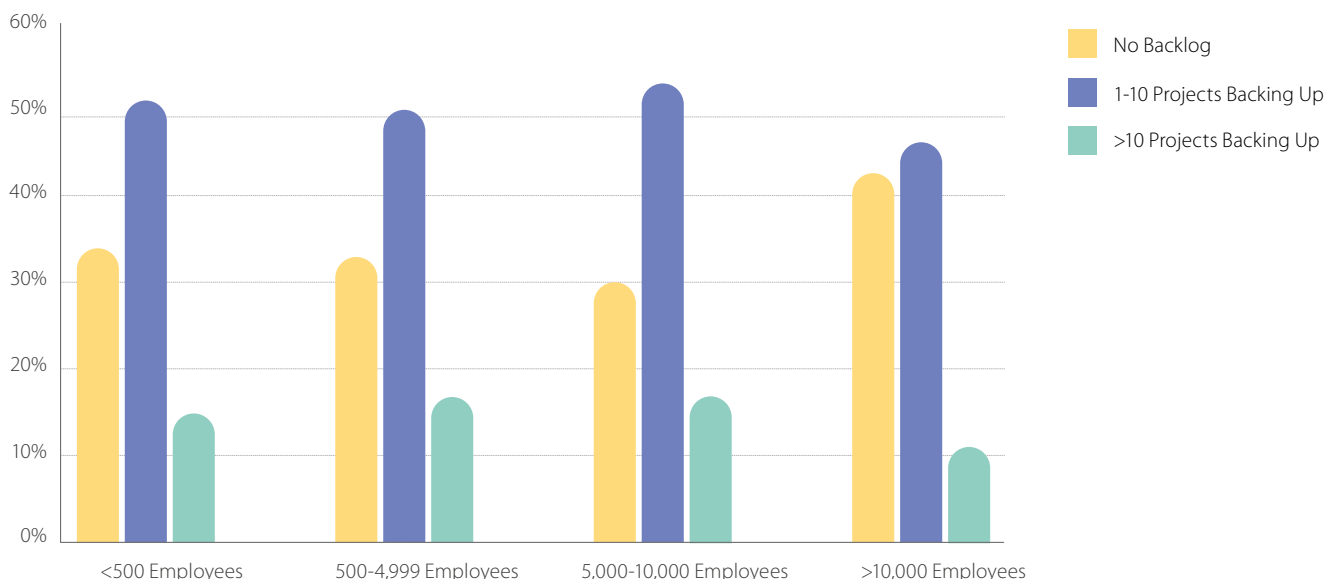


Fig. 22: Backlog by Organization Size

When we compared the backlogs of organizations using low-code with organizations not using low-code, as shown in Fig. 23, respondents reported very different situations. Thirty-one percent of organizations using low-code said they had no backlog, compared to 11% of those not using low-code. Only 16% of organizations using low-code said they had more than ten applications in their backlog compared to 41% of those not using low-code.

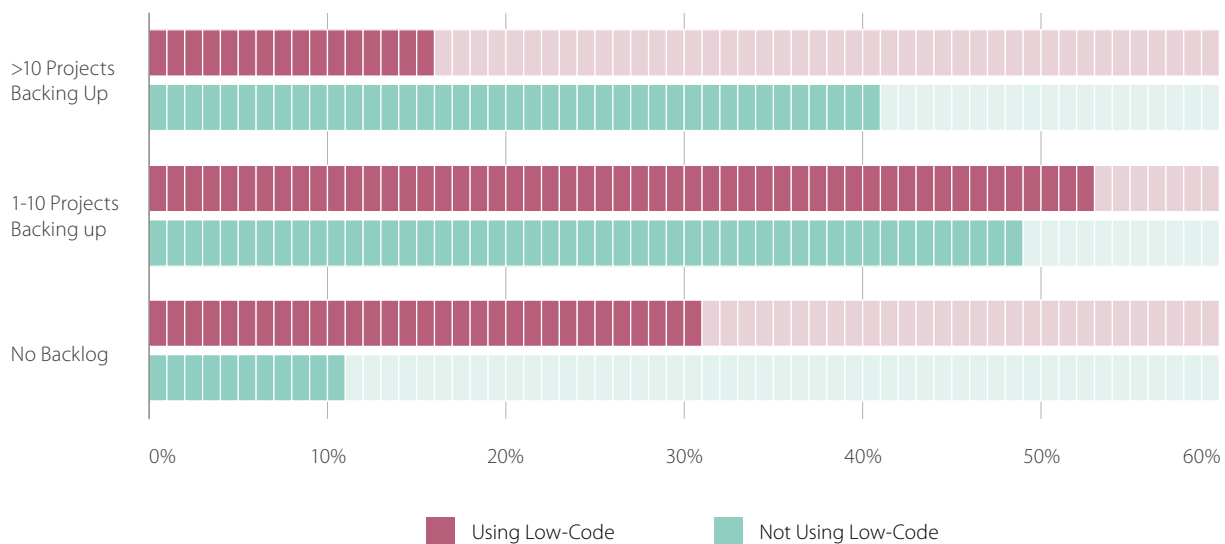


Fig. 23: **Low-Code vs. No Low-Code Backlogs**

We asked how the backlog situation compared to 12 months ago. We analyzed the responses to focus just on organizations that said the size of their development team was roughly the same as last year. As shown in Fig. 24, only 32% of organizations say their backlog has improved in the past year.

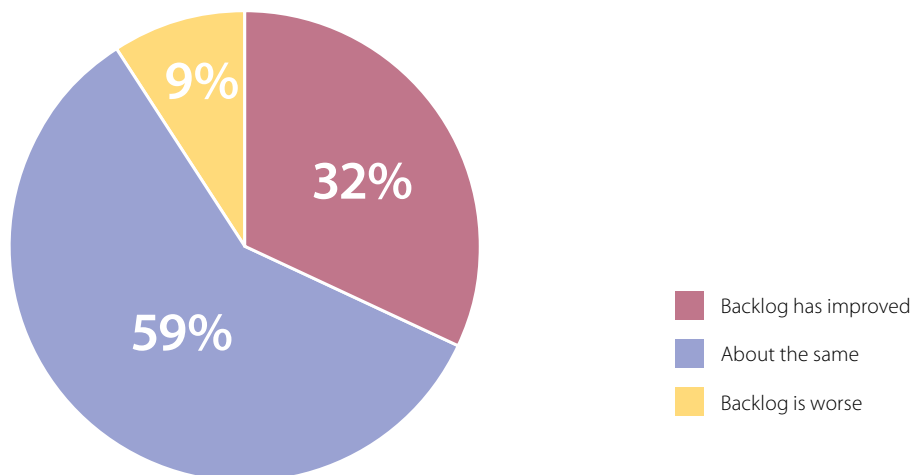


Fig. 24: **Backlog Compared to 12 Months Ago**

Those using low-code claim to be performing slightly better, with 38% saying that their backlog has improved.

Outsourcing Development

Fifty-five percent of respondents said their organization had outsourced some development in the past year, and typically, such outsourcing was for both web and mobile applications. Eight percent of respondents outsourced just mobile development.

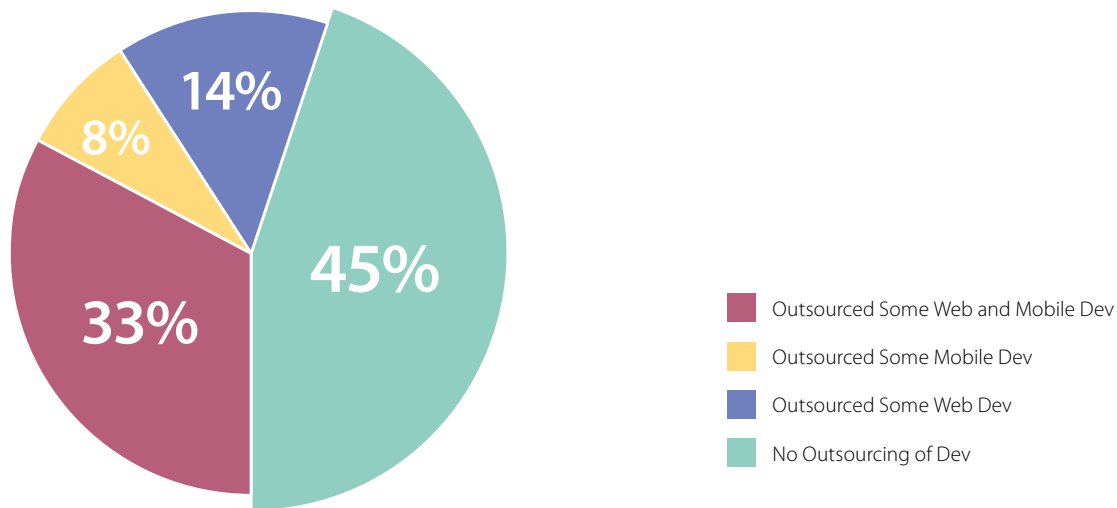


Fig. 25: **Development Outsourcing in the Past Year**

When we looked at the prevalence of outsourcing across the different organization sizes, mid-sized organizations were most likely to outsource some web and mobile development at 61%. Large organizations (over 10,000 employees) claimed to make the least use of outsourced development (49%).

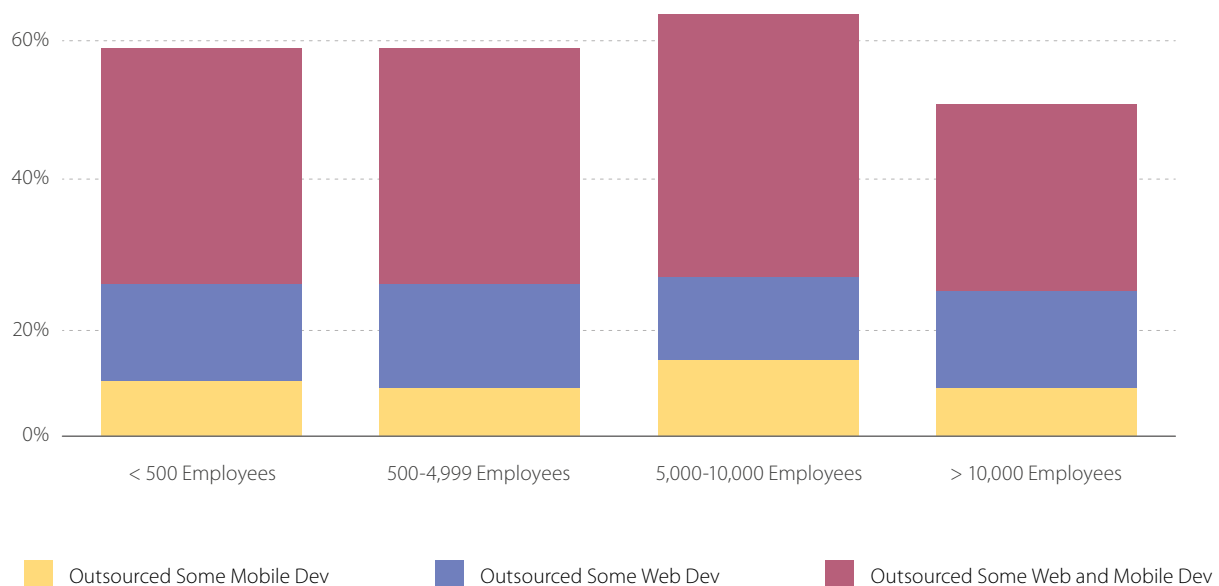


Fig. 26: **Outsourcing by Organization Size**

Hiring Developers

Sixty-five percent of respondents said their organization had hired web or mobile developers in the past year. Eighty percent of respondents believe there's a developer skills shortage and that hiring takes longer and costs more. Twenty percent said they felt this applied particularly to mobile app dev skills, but 43% of respondents said they thought both web and mobile development skills were proving hard to hire.

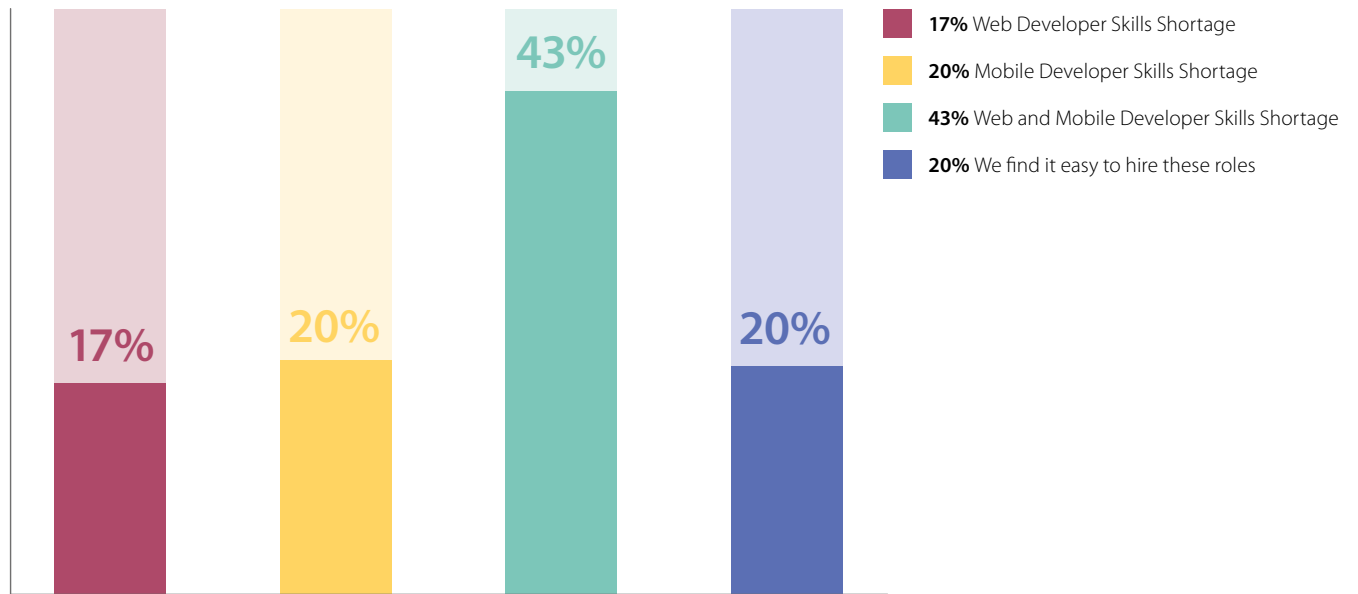


Fig. 27: Views on the Developer Recruitment Market

New Approaches

According to a wide variety of industry analyst reports, many organizations are adopting new approaches, including citizen development and low-code application development platforms, to cope with rising app dev demand and the difficulty of hiring development skills that are in short supply.

Use and Governance of Citizen Developers

We asked respondents whether their organizations had citizen developers and, if so, how effectively their organizations governed them. In the survey, we defined citizen developers as *“non-professional developers who don’t report to IT.”* As shown in Fig. 28, we found significantly differing points of view, depending on whether or not low-code was in use by organizations.

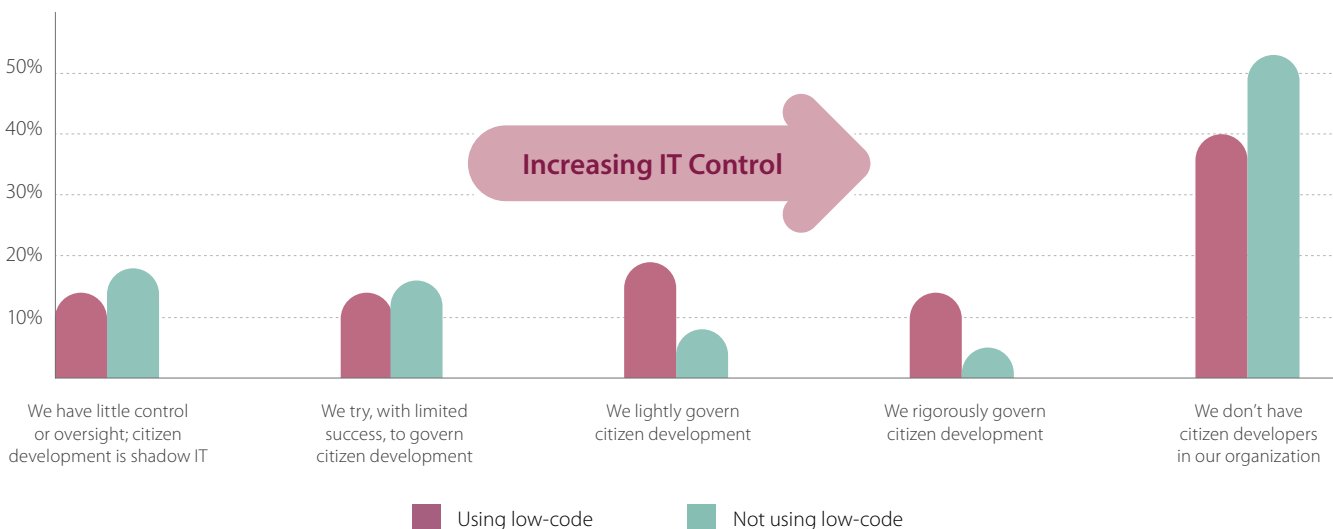


Fig. 28: Citizen Development in Organizations

Forty-eight percent of all respondents said, “We don’t have citizen developers in our organization.” Given that many industry analysts describe citizen development as an increasing phenomenon, we suspect that some respondents may not have visibility of some business-led development that’s going on in their organizations. In all fairness, however, these respondents fall into three camps:

- Some work in organizations where IT meets all business requirements fast enough, so business-led development hasn’t become an issue.
- Some work in organizations where IT, security, and HR policies have eliminated business-led development.
- Some may be living in denial or are unaware of non-professional developers as they’re outside of IT’s remit.

Compared to organizations that did not use low-code, users of low-code were:

- 13% less likely to state that they had no citizen developers
- 6% less likely to describe governance of citizen development as absent or limited
- Twice as likely to state that they “lightly governed” citizen development
- Nearly three times as likely to state that they “rigorously governed” citizen development

Use and Purpose of Low-Code Development Platforms

We asked respondents whether a no-code or low-code development platform was currently part of their IT strategy. Thirty-four percent said that their organization was already using such a platform, and a further 9% said they would start to use one soon. In this report, where we have made comparisons between users and non-users of low-code, it is just the 34% already using that we have compared to all other responses.

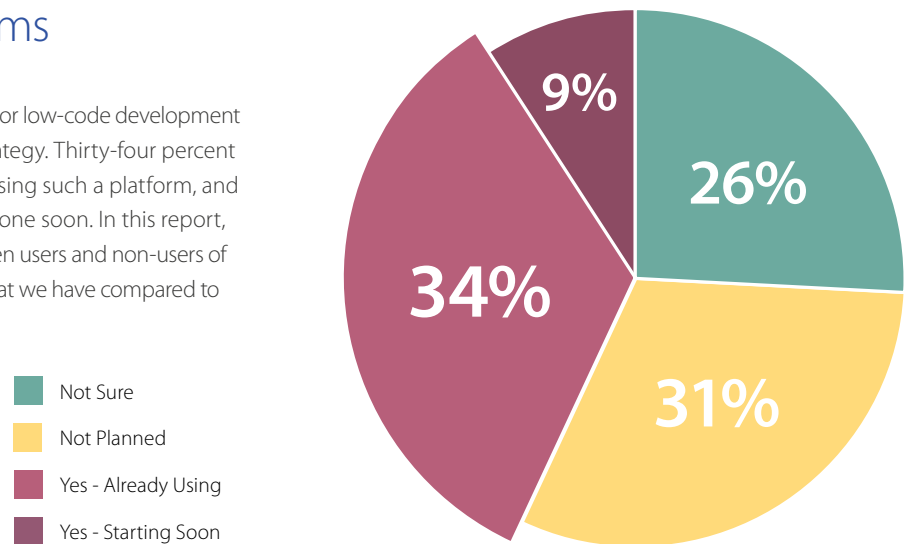


Fig. 29: **No-Code and Low-Code in IT Strategy**

Role of Citizen Developers With Low-Code

Respondents who said their organization was already using low-code were asked to describe the role that citizen developers were playing with such tools. Although 22% said that, in some cases, citizen developers had failed to produce working apps, these responses include organizations where IT rather than business users are the developers. Since there wasn't an N/A answer option, this was the closest applicable answer.

As can be seen in Fig. 30, 40% of organizations have had citizen developers prototype or mock-up applications. Although, most commonly, citizen developers are involved in creating departmental or employee-facing apps, an impressive number of respondents said that citizen developers played a role in creating customer-facing apps (24%) and enterprise apps (22%).

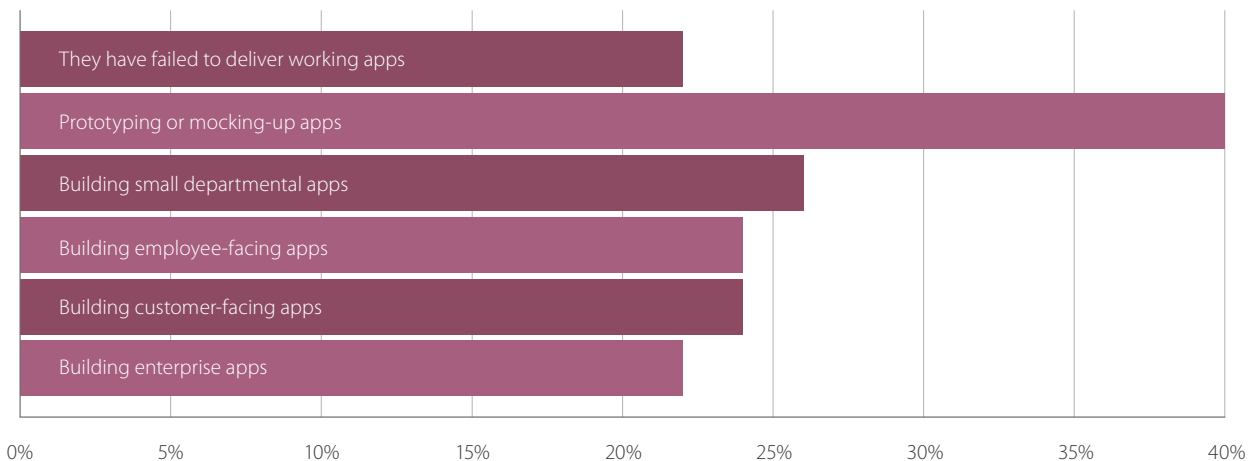


Fig. 30: **Citizen Developers Using Low-Code or No-Code Platforms** (Multiple answers allowed)

Current Projects Using Low-Code

We asked what kinds of projects they were using low-code for, and they were allowed multiple answers. As shown in Fig. 31, the standout answers were customer and partner-facing portals and web-based applications (50%) and employee-facing portals and web-based applications (49%). Mobile applications, both customer and partner-facing (32%) and employee-facing (28%), were closely followed by extending or replacing existing legacy systems. Sixteen percent of respondents said they were just in the process of starting.

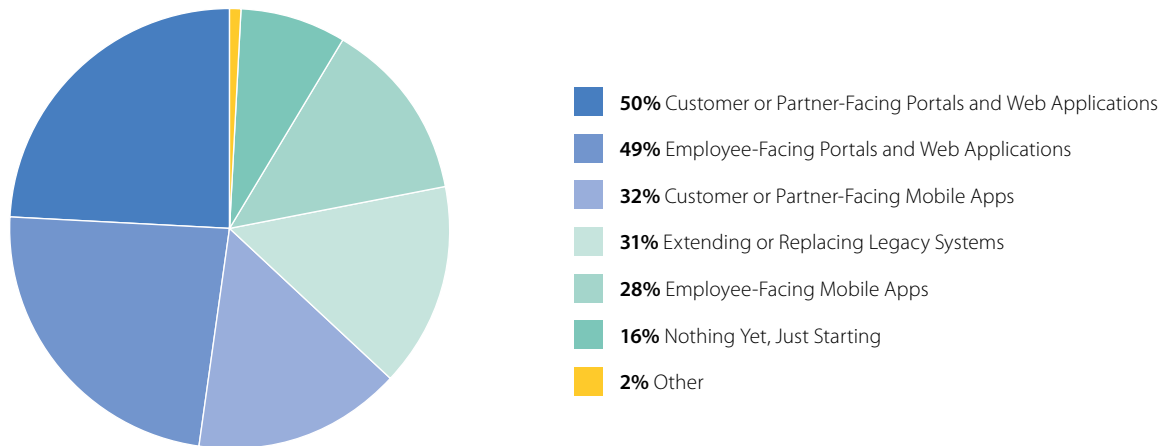


Fig. 31: Projects Using Low-Code

Main Reasons for Using Low-Code

We asked respondents what the main reasons were for using low-code platforms in their organization, and they were allowed multiple answers. The three answers that stood out were accelerating digital innovation and transformation (69%), reducing current IT backlog and increasing responsiveness to the business (55%), and reducing dependency on hard-to-hire technical skills (38%). Other answers are shown in Fig. 32.

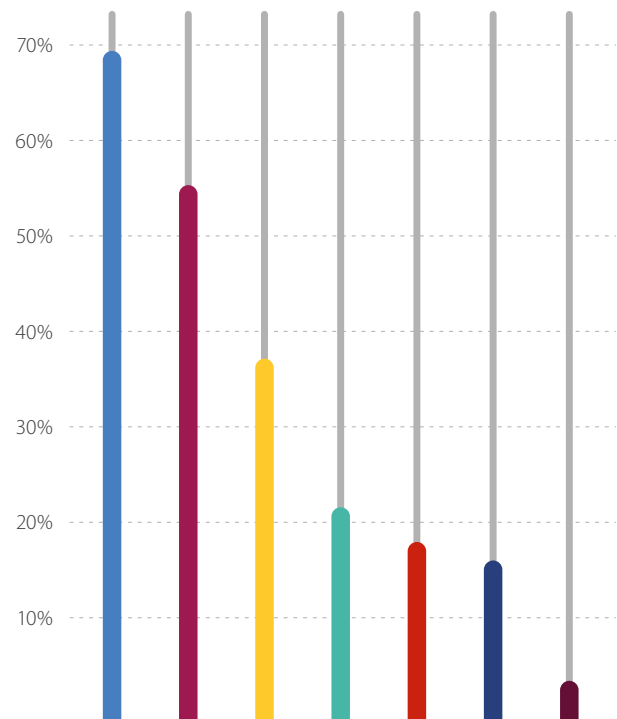
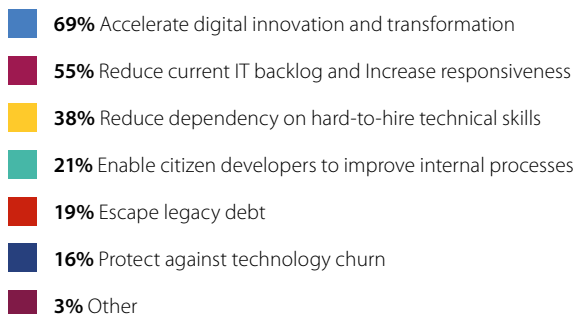


Fig. 32: Reasons for Using Low-Code Platforms

Digital Transformation and the Case for Low-Code

When asked for the main reasons that they were using low-code, 69% of respondents said accelerating digital innovation or transformation. So, in this section of the survey report, we examine low-code's credentials for helping with your digital transformation efforts.

Low-Code is Delivering

According to the opinions provided by over 3,500 respondents in this survey, low-code is making a significant difference for those who have adopted it.

Compared to those who are not, respondents who are using low-code are:

- 21% more likely to describe their organization as happy or somewhat happy with the speed of application development
- 15% more likely to deliver applications in four months or less
- Less than half as likely to report app delivery times of 12 months or more
- 15% more likely to describe their agile maturity as level 3, 4, or 5
- 10% more likely to describe their DevOps maturity as level 3, 4, or 5
- Nearly three times more likely to say they have no app dev backlog
- Two-and-a-half times less likely to have a backlog of over ten applications waiting for development
- Three times more likely to describe citizen development as tightly governed

And, 9% of the survey respondents who were not already using low-code said they'd be starting soon.

Digital Transformation or Disruption?

Digital disruption is an existential threat to all businesses. The average tenure of those in the S&P 500 has plummeted from 60 years to less than 20 years since the 1950s and is forecast to be just 12 years a decade from now.

The world is changing at breakneck speed, and the challenge for all businesses is to identify the threats and opportunities that will come from digital innovation and respond faster than their competitors. Those that fail in this task risk hemorrhaging customers and revenue to more agile competitors, including new disruptors, that aren't weighed-down by complex architectures and legacy-debt.

It's no wonder, then, that digital transformation is the number one concern for two-thirds of Global 2000 CEOs. And yet, far too many businesses are struggling with digital transformation. McKinsey says that many long-established firms are losing as much as half their revenue growth to more digitally-savvy competitors.

So, what's holding organizations back?

Barriers to Digital Transformation

As confirmed in this survey, we see four fundamental barriers to digital transformation:

- **Massive backlogs.** Sixty-five percent of respondents overall complained of app dev backlogs, and 15% had more than 10 projects backing-up. Sixty-eight percent said this situation was unimproved in the past year.
- **Scarce resources.** Thirty-eight percent of respondents said their app dev team had grown in the past year. Few (8%) thought theirs had shrunk. Sixty-five percent said their organization had hired web or mobile developers in the past year, and 80% said it was hard to hire skilled developers, and as a result, hiring was taking longer and costing more. Fifty-five percent of organizations have outsourced some web and mobile development (or both) in the past year.
- **Legacy debt.** Sixty percent of respondents said the main cause of complexity and delay when developing web and mobile apps was legacy system integration and deficient APIs. Based on survey responses, we estimate that 63% of the app dev projects that organizations have planned for 2018 are replacing and updating applications that they already have and not genuinely new, innovative development.
- **Uncertainty.** Digital transformation is, by its very nature, uncertain. That's because it involves the creation of new business models, new digital ways of delivering value to customers, and harnessing new digital technologies. This is a million miles from the relative comfort of continuous process improvement. Experimentation is the name of the game, and as revealed in this survey, 52% of respondents are investing in customer-centric innovation methods, such as design thinking, customer journey mapping, and lean UX.

Capacity Improvement Efforts are Coming up Short

Organizations are investing in approaches and technology to improve the speed and quality of software delivery. However, since 68% of respondents say their app dev backlog has not improved in the past year, the capacity improvement efforts are not keeping pace with demand.

Sixty percent of respondents said they'd invested in agile development training or consulting in the past year. Forty percent said they invested in DevOps. Mastering these practices is crucial for increasing application delivery. Further, these capabilities are essential to cope with uncertainty. Experimentation requires a test and learn approach, meaning short sprints, continuous integration, and continuous delivery or deployment.

And yet, according to the survey, agile maturity languishes at 2.6 out of a possible 5 and DevOps maturity at 2.4 out of a possible 5.

Seventy-seven percent of respondents have invested in the cloud, and 24% have invested in containerization and microservices. And yet, application delivery capacity still lags behind growing demand.

Breaking Down the Digital Transformation Barriers and Improving Capacity with Low-Code

The exciting reality is low-code can help you overcome every one of these barriers. And, it will help you improve agile adoption, simplify your DevOps “toolscape,” and give new impetus to your cloud strategy.

You can get chapter and verse on how low-code, and more specifically OutSystems, delivers on these promises by reading our eBook **“Why IT Struggles with Digital Transformation and What to Do About It.”** But, for ease of reference, here are the main takeaways:

- **Eliminate backlogs.** With application delivery speeds 5-10 times faster than hand-coding, low-code can help you get on top of your backlog and then spend more time innovating.
- **Overcome resource constraints.** Instead of joining the increasingly frenetic fight to attract and retain digital developers, you can turn existing developers into full-stack pros. That’s because with OutSystems, a single visual IDE is all you need to build beautiful responsive web, native mobile, and hybrid apps. OutSystems is the industry-leading low-code development platform for application development and delivery professionals.
- **Integrate with anything.** OutSystems includes dozens of out-of-the-box integrations for systems like SAP and Salesforce. You can visually model and rapidly create back-end services for REST and SOAP consumption and architect flexible, reusable integration that isn’t buried in application code.
- **Turbo-charge your innovation.** OutSystems will help you thrive in the paradigm of digital experimentation and

uncertainty. Rapid visual prototyping keeps business users engaged in collaborative design sessions, shortening feedback delay. Minimum viable products are easily scaled into enterprise apps. You also have the confidence of knowing that if you pivot, you will not be throwing weeks of development effort away, which gives you much more courage for experimentation.

- **Improve agile adoption.** OutSystems can help you break down specialist developer silos because one skillset and one IDE can be used for all kinds of development. This improves collaboration and gives application development managers newfound flexibility for how they organize and assign work to team members. The essential ingredients for improved agile business engagement, namely high-speed prototyping and visualization, are all there.
- **Simplify your DevOps toolscape.** Time and again, we hear IT leaders bemoaning the DevOps trap that they’ve fallen into. The bewildering and complex array of tools required for code validation, version control, continuous integration, test automation, security testing, deployment automation, and performance monitoring is burning too much budget and manpower. Given the risks and potential rewards from digital innovation, IT needs to rebalance its priorities to maximize customer-centric innovation, instead of reinventing the DevOps stack. OutSystems includes multiple DevOps capabilities needed to achieve continuous delivery, as well as one-click deployment, performance monitoring, and user feedback. That said, OutSystems is open and can be integrated with a variety of other DevOps tools, as needed.

Low-Code Fears and Confusion

Respondents who said they weren't using or weren't about to start using a low-code platform explained their main reasons. As you can see in Fig. 33, lack of knowledge is the main barrier, and concerns regarding capability, vendor lock-in, security, and scalability cluster close behind.

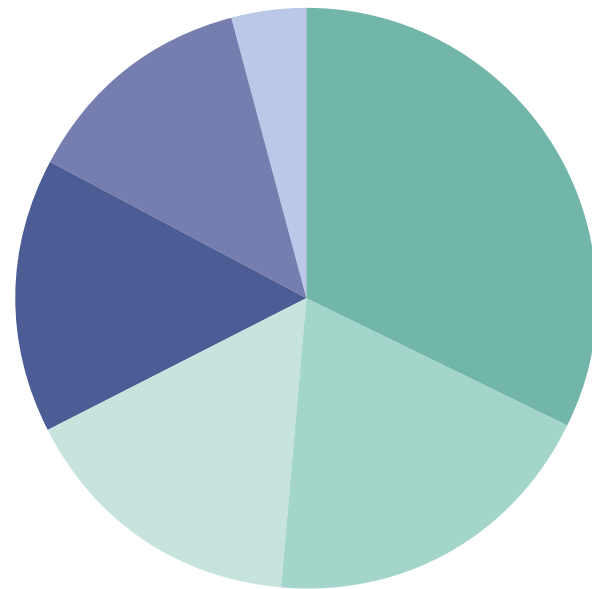
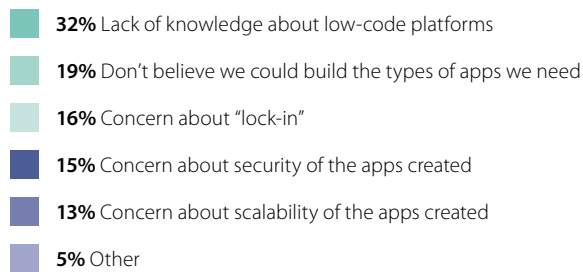


Fig. 33: Reasons for Not Using or Considering Low-Code

It's time to bust some low-code myths.

You Really Can Build the Apps You Need

If you choose the right low-code platform, there is no limit to what you can build. However, with over 76 vendors fighting for your attention, including lightweight business-user and citizen developer tools, specialty mobile development tools, and platforms for application development and delivery (AD&D) pros, there is a risk of choosing a platform that boxes you into a corner.

If your primary concern is having the power and flexibility to build everything you need, then focus on a low-code platform for AD&D pros. We're proud to be ranked as a market leader in this most strategic of low-code market categories. Find out more at outsystems.com/platform.

You Can Escape Vendor Lock-In

OutSystems generates standard code and data models that run in standard application server stacks—no runtime interpreters. Unlike other low-code platforms, with OutSystems you will always have your applications and data. Read our **Standard Architecture with No Lock-in** webpage for the full rundown.

Security

OutSystems has an extensive set of built-in security features. Every application created with OutSystems is secure over its entire lifecycle. Get the full lowdown on **OutSystems secure architecture** [here](#). Find out about our **security certifications** [here](#).

Scalability




The OutSystems architecture supports a wide range of options, including vertical scalability and horizontal scalability, adjustable to a customer's specific requirements. A simple departmental application can grow to a large internet-wide deployment supporting millions of users without additional development. **Find out about OutSystems scalability** [here](#).

The Last Word

We'd like to say a huge thank you to the 3,555 IT and application developers who took the considerable efforts to complete this survey. Without their interest and dedication to considering each of these questions and giving their full and frank responses, this report would not have been possible.

If you've read this far, then the chances are you're researching modern approaches to application development and low-code in some detail. Perhaps your own organization's situation is similar to that of the 2,470 respondents whose organizations have not yet implemented low-code. Or, perhaps you're a little further down the line like the 259 respondents who said they'd be starting to use low-code soon.

Getting started with low-code is meant to be easy, and that's certainly true of OutSystems. Here are three recommended next steps to continue your learning.

<p>OutSystems Evaluation Guide</p> 	<p>Try OutSystems for Free</p> 	<p>See What Others Are Saying about OutSystems</p> 
<p>This comprehensive guide answers the most common technical questions asked by teams that are considering OutSystems.</p>	<p>Get started with your own FREE personal environment on the OutSystems cloud, including full and free access to all our e-learning and documentation</p>	<p>Our Happy Customers microsite gives you one-click access to thousands of independent user reviews on websites like Gartner Peer Insights, Capterra, TrustRadius, G2-Crowd, and GetApp.</p>
<p>Read the Guide</p>	<p>Try It Now</p>	<p>Feel the Love</p>

Thank you for reading. Whatever questions you have, we'd love to hear from you. **You can contact us here.**

Appendix

More Demographics

Developer team size: Just over half of respondents said that their organization had fewer than 50 developers. Surprisingly, more said they had over 1,000 developers than those who said they had between 201 and 999 developers.

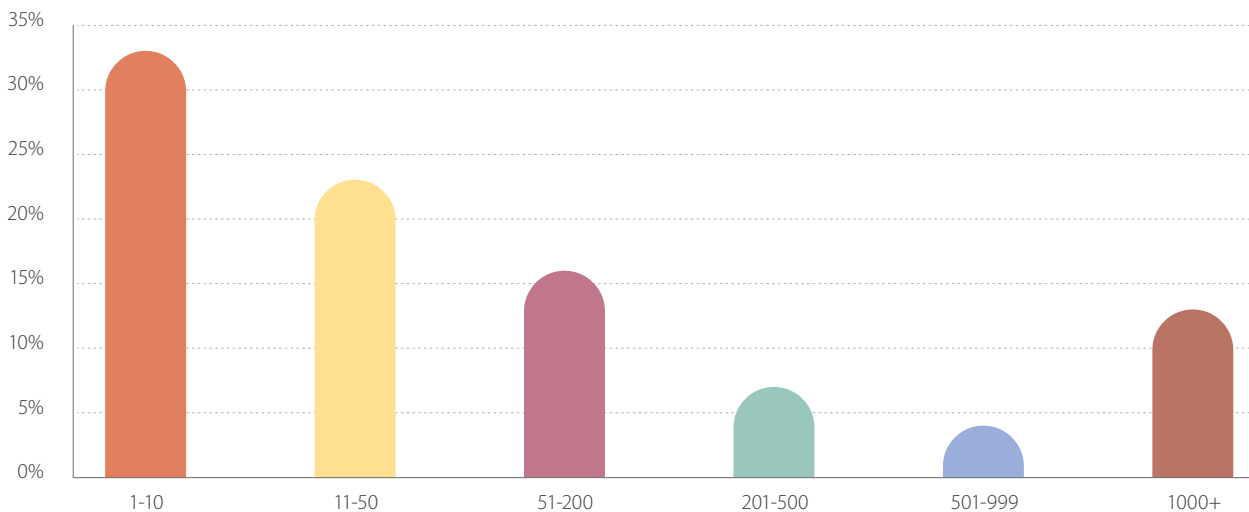


Fig. 34: **Software Developers in Respondents' Organizations**

Favorite sources for keeping up to date with technology trends: Developers rely on lots of different information sources and seem more likely to search for answers than rely on single sources. The top five mentions were search (Internet, Web, Google), DZone, blogs, newsletters and emails, and LinkedIn. This word cloud shows the main sources; size illustrates response frequency.



Fig. 35: **Favorite Sources for Technology Trends**

Just for Fun

Porg fans you are not: Although 66% of respondents were happy to name a favorite Star Wars character, R2D2 outscored Porgs by 10:1. Perhaps it's not surprising that a tech audience prefers a robot to shy, cute space-bird-fish-things. (Nope, I don't find them cute either.) We were impressed to see so many followers of the Sith Lord, who is known to be a huge fan of low-code. As he said in Star Wars: Episode IV, ***"Don't be too proud of this technological terror you've constructed. The ability to destroy a planet is insignificant next to the power of the low-code force."*** Of course, we're not in the business of destroying planets, but we can certainly tame your technological terror and help you vaporize your backlog.

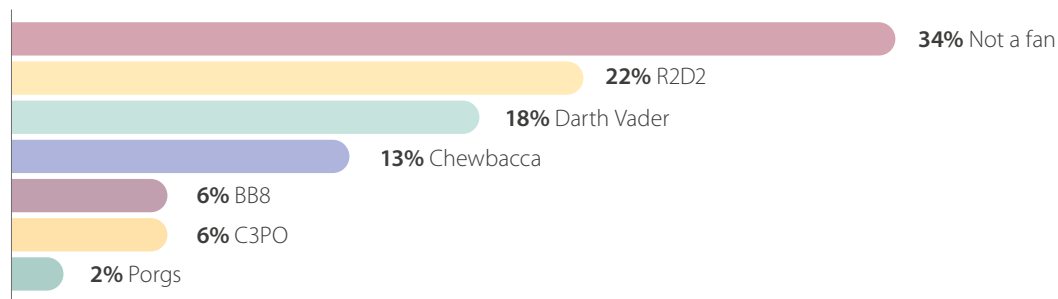


Fig. 36: Favorite Star Wars Characters

Favorite sports: With more responses from Europe than North America, it was inevitable that real football (the kind played with your feet), thrashed American football 6-0.

But, what a curious bunch developers are! Although our survey included the world's top 20 most popular sports, our respondents managed to place "other" in second place. We'd love to know what you're playing.

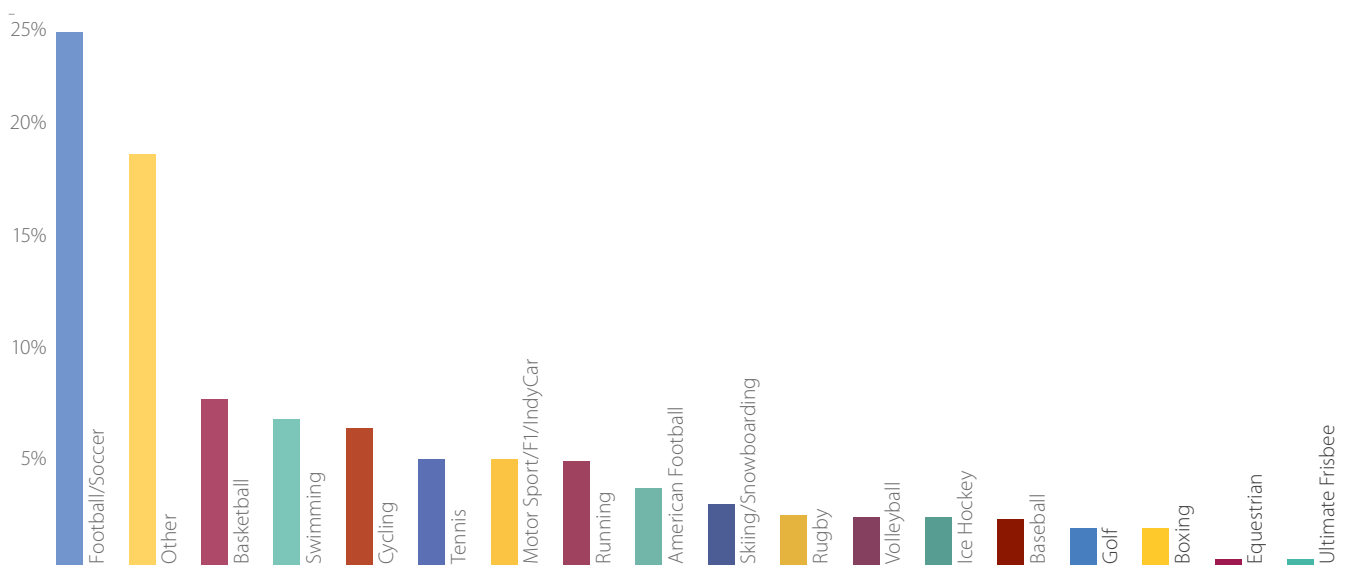


Fig. 37: Favorite Sports

Recommended IT reading for your CEO: For the question of which book they would like their CEOs to read to understand IT challenges, the five books we suggested scored as follows.

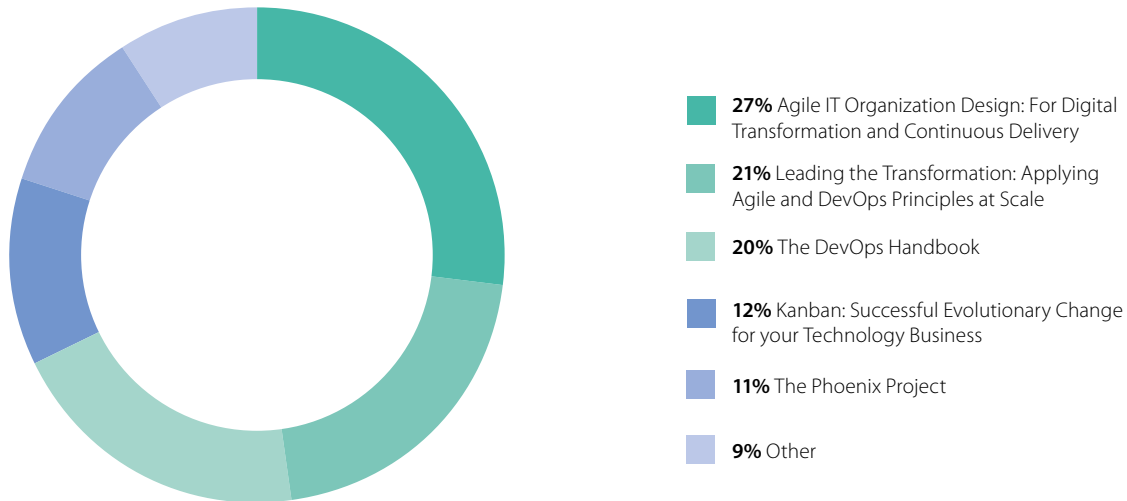


Fig. 38: Recommended Reading for CEOs

But, as can be seen from the following word cloud, respondents had plenty of great suggestions of their own.



Fig. 39: Respondents' Own Suggested Reading for the CEO

If you've not read the books on our shortlist, here are summaries and links.



The Phoenix Project: A Novel About IT, DevOps, and Helping Your Business Win

In a fast-paced and entertaining style, three luminaries of the DevOps movement deliver a story that anyone who works in IT will recognize. Readers will not only learn how to improve their own IT organizations; they'll never view IT the same way again.



The DevOps Handbook: How to Create World-Class Agility, Reliability, and Security in Technology Organizations

The DevOps Handbook shows leaders how to create the cultural norms and the technical practices necessary to maximize organizational learning, increase employee satisfaction, and win in the marketplace.



Leading the Transformation: Applying Agile and DevOps Principles at Scale

Leading the Transformation is an executive guide, providing a clear framework for improving development and delivery. This book targets the coordination of work across teams in large organizations—an improvement that executives are uniquely positioned to lead.



Kanban: Successful Evolutionary Change for Your Technology Business

Kanban is becoming a popular way to visualize and limit work-in-progress in software development and IT work. This book answers the questions: What is Kanban? Why would I want to use Kanban? How do I go about implementing Kanban?



Agile IT Organization Design: For Digital Transformation and Continuous Delivery

Aspiring digital businesses need overall IT agility, not just development team agility. In *Agile IT Organization Design*, IT management consultant and ThoughtWorks veteran Sriram Narayan shows how to infuse agility throughout your organization and introduces an agile approach to “business–IT effectiveness” that is as practical as it is valuable.



The Mythical Man-Month

Few books on software project management have been as influential and timeless. With a blend of software engineering facts and thought-provoking opinions, Fred Brooks offers insight for anyone managing complex projects.

About OutSystems

OutSystems is the number one platform for low-code rapid application development. Thousands of customers worldwide trust OutSystems as the only solution that combines the power of low-code development with advanced mobile capabilities, enabling visual development of entire application portfolios that easily integrate with existing systems.

The Fastest Way to Build Enterprise-Grade Applications

- Visually develop full-stack apps
- Integrate with everything
- Deploy to any device
- No lock-in, no boundaries

Learn more at www.outsystems.com



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