

# *Raising the Flag*

The rise of feature flagging

The rapid pace of digital technology adoption is disrupting established markets and fueling significant changes in the way customers and organizations interact.

Underpinning many of these interactions are applications. Increasingly for customers, the application acts as a digital doorway to an organization and their experience using them can make or break their decision to purchase.

In order to remain competitive, organizations are more likely to be developing their own applications in-house, however, many are struggling to do so rapidly enough, while continuously striving to improve their service to customers. Does this sound like your organization?

Customer expectations are constantly evolving, as is the demand for new features within applications, so it is vital organizations get this right. But developing new features, deploying them quickly and safely, and then managing them can be difficult – especially while trying to prevent downtime for customers.

This research aims to answer the following questions:

**How many new features are being added to organizations' applications and what are the challenges they face?**

**What is the current status of feature flag use in organizations?**

**Will feature flags help or hinder organizations in their implementation of new features?**

**How may the use of feature flags change in the future?**

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# Key findings

Nearly all (95%) respondents' organizations **have implemented, begun implementing, or plan to implement** feature flags in the future

Almost all (99%) of this group **have experienced/expect to experience benefits** from the implementation of feature flags, including...

**46%**

Reduced risk

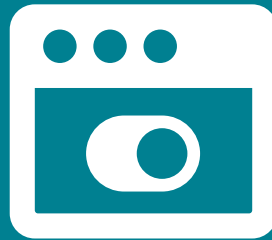
**46%**

Increased speed of development

**45%**

Increased speed of deployment

**97%** of respondents say that it is important for their organization to **implement new application features quickly...**



...yet **65%** say it is **difficult** for their organization to do so safely

Those in organizations that have already implemented feature flags/toggles are **less likely (56%)** to say that it is **difficult to develop new features for its applications quickly**, compared with those that have begun implementing (**71%**) and those that are planning to implement (**80%**)



92% of respondents report that **keeping up with customer expectations** is what drives their organization to **create new applications/ make changes to existing applications**

**72%** report that their organization has **lost customers/users due to application development errors**, but **87%** agree that **enabling an on/off switch ('kill' switch) for features** reduces the risk of downtime for customers

Another benefit is **improved personalization (39%)**, linking to the importance of **providing different users access to different application features (96%)** and providing organizations with advanced software development practices

**81%** of respondents who know what feature flags are, think that their organization's **use of feature flags will increase** over the next 12 months

# The state of application development in organizations

The application economy is continuing to grow and organizations today are striving to keep up by developing and investing in their own application portfolios.

On average, respondents' organizations have 17 different applications built by their software development teams that are currently available for use by customers or staff. And even more are expected to be used in the near future – on average, they are likely to develop five new applications in-house by their software development team in the next 12 months. This means that these organizations are likely to have 22 different applications for use by customers or staff in the next 12 months, on average, just emphasizing that the growth is set to continue.

## Application development

However, what is driving organizations to develop applications at such an increasing rate? Over nine in ten (92%) agree that keeping up with customer expectations is what drives their organization to create new

applications/make changes to existing applications. It is important for organizations not only to create new applications, but also to ensure their current ones are continuing to improve to help them gain a competitive edge.



different applications built by software development teams, **currently available** for customer or employee use, on average...

...rising to **22** different applications on average in the **next 12 months**



Most organizations are updating their applications regularly. Over six in ten (61%) respondents' organizations release new versions or updates for application(s) once a week or more, demonstrating that they understand the importance of this as well.

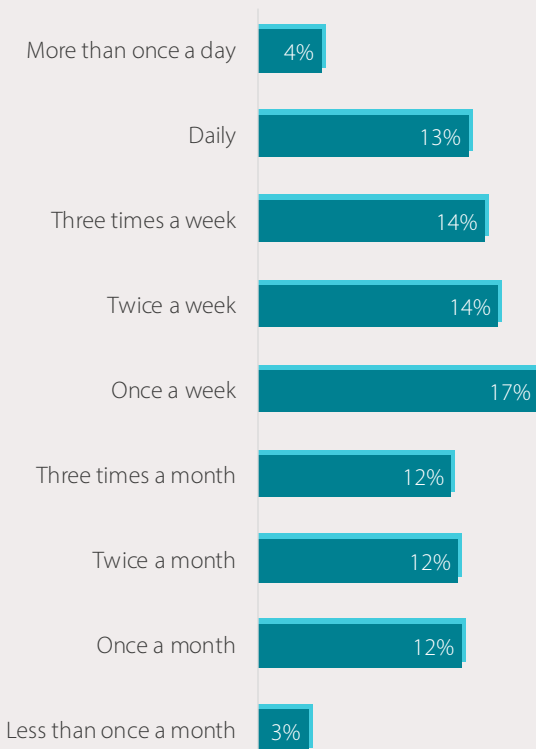
With application development a priority for many, what bumps do organizations face along the way?



61%

release **new versions or updates for applications** once a week or more

### Frequency of new application versions or updates



Asked to all respondents (500)

## Challenges in implementing new application features

It is clear that organizations are continuously developing new applications, and releasing new versions frequently in order to keep up with customer expectations, but how much are new features a part of this? Well, with almost all (99%) respondents saying that it is important for their organization to implement new application features, it suggests features have a key role to play.

This is evidenced by the significant development plans that organizations have when it comes to their existing applications. On average, respondents report that their organization is adding 22 new features (excluding bug fixes) to each of their applications per year.



**22** new features being **added to each application** per year (excluding bug fixes)

However, doing it at the required speed is proving a major challenge – nearly seven in ten (69%) report that it is difficult for their organization to develop new features quickly and around two thirds (65%) say it's difficult to deploy them quickly and safely. For many, the brakes are being put on their plans to expand.

With almost all (97%) agreeing that it is important to be able to implement new features quickly, what is the solution to overcoming these hurdles?

# Implementation of feature flags

Organizations are constantly developing new features for their applications, but how many organizations have implemented feature flags?

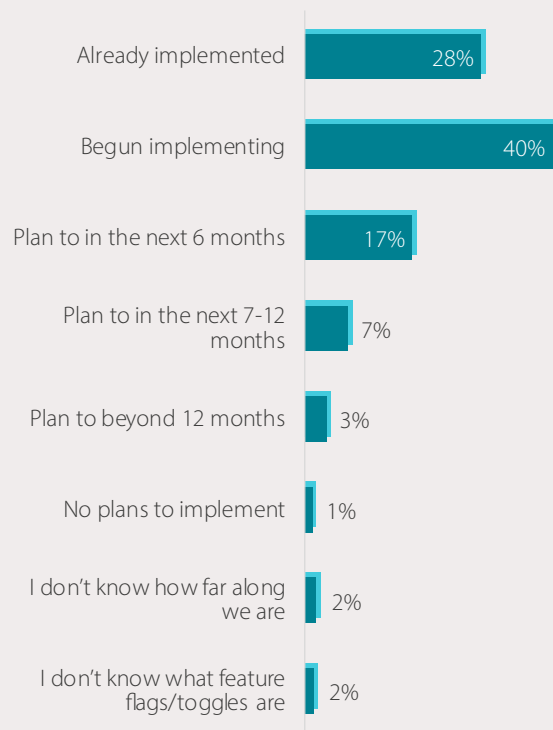
Nearly all (95%) respondents' organizations have implemented, begun implementing, or plan to implement features flags in the future and only 1% say their organization has no plans to implement them – does this emphasize simply a new 'fad' or a potential solution to making it easier for organizations to deploy new features quickly and safely?



95%

have either **implemented, begun implementing or plan to implement** feature flags in the future

## Feature flag implementation status



Asked to all respondents (500)

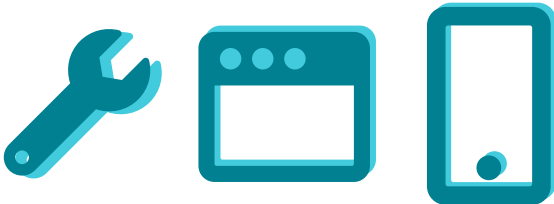
## Increasing use of feature flags

Almost three in ten (28%) organizations have already implemented feature flags and four in ten (40%) have begun implementing – of this group, they have an average of 30 feature flags per application.

And what's more, there are plans to continue increasing their use.

The majority of the same group

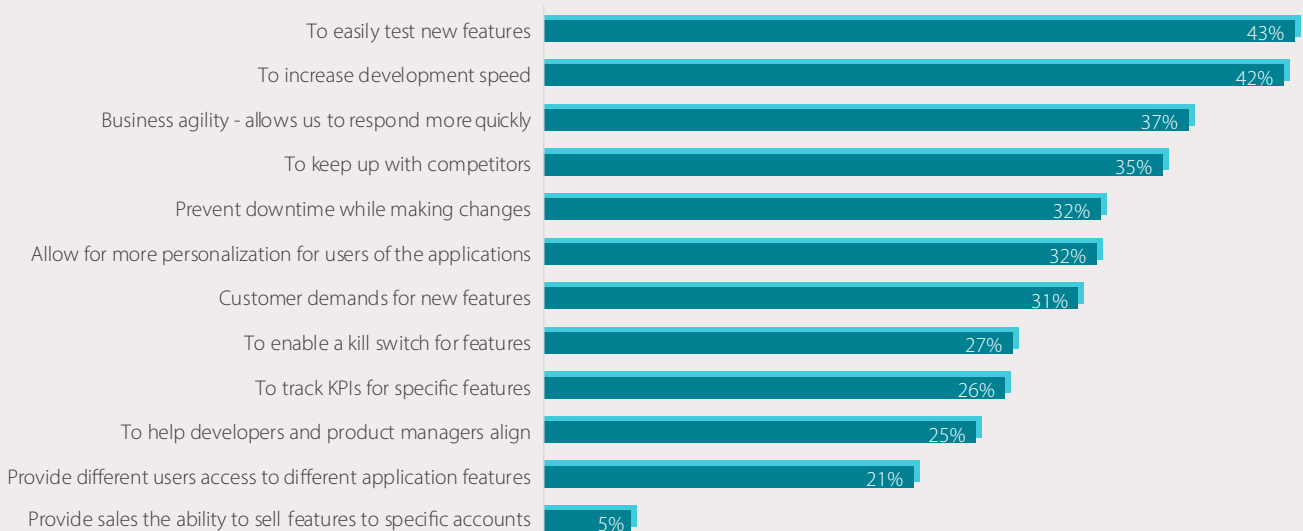
of respondents' organizations are planning to add/are adding feature flags to both web and mobile applications (57%) and/or both the front and back end of applications (64%).



But why are organizations implementing feature flags? Around four in ten respondents from organizations that have already implemented, begun implementing or are planning to implement feature flagging say that it is to easily test new features (43%), increase development speed (42%) and/or allow their organization to respond more quickly (37%). As we have already seen, the majority have said that keeping up with customer expectations is what drives their organization to create new applications/make changes to existing applications, so it isn't surprising that more than three in ten (31%) say customer demands for new features is a main driver for implementing feature flags.

Almost a third of those that have already implemented, begun implementing or are planning to implement feature flags, report that the main reason for implementing them is to allow for more personalization for users of the applications (32%) and/or to prevent downtime while making changes (32%). Respondents also highlight the importance for their organization to gradually release application features to a percentage of their user base with over nine in ten (92%) saying this. Perhaps because this may be a way of reducing downtime for customers.

### Main reasons for implementing feature flags



Asked to respondents from organizations that have already implemented, begun implementing or plan to implement feature flags (477)

The effects of downtime vary across organizations, sectors and what the application is being used for. However, downtime can have huge ramifications for organizations, potentially resulting in lost opportunities, loss in productivity, customers or revenue, and even damaged reputation.

Another reason for implementing feature flags is to enable a kill switch for features (27%). With the majority (87%) of respondents saying that enabling an on/off switch ('kill' switch) for features reduces risk of downtime for customers, we see why so few organizations are not planning to implement feature flagging.

But what are the risks and challenges when deploying new features?

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### Why implement feature flags?

- ✓ Easily **test new features** (43%)
- ✓ Increase **development speed** (42%)
- ✓ Respond **more quickly** (37%)





# Challenges when deploying new features

There is increasing pressure on organizations to deploy new features to keep up with customer expectations and remain competitive.

There is increasing pressure on organizations to deploy new features to keep up with customer expectations and remain competitive. As we have already seen, it is important for organizations to implement new features quickly, but it is difficult to do so safely. Respondents' organizations have experienced an application outage 13 times, on average, when deploying new features, which could be as a result of trying to implement new applications too quickly.

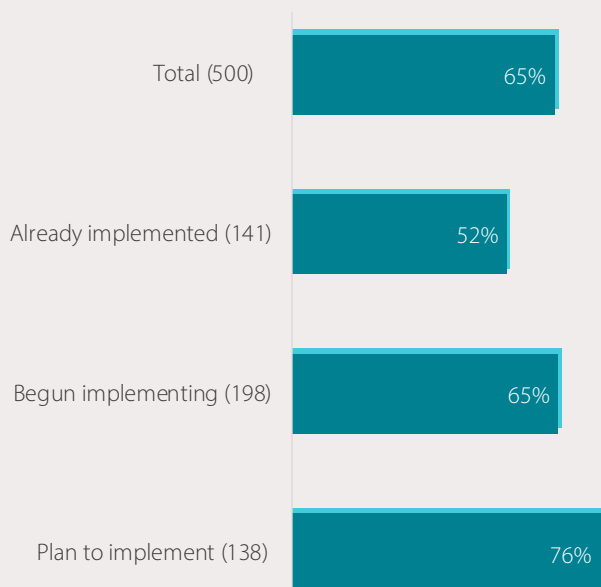
However, respondents in organizations that have already implemented feature flags are less likely (52%) to say that it is difficult to deploy new features for their applications quickly and safely, compared with those that have begun implementing (65%) and those that are planning to implement (76%) feature flags.

This suggests that it is easier to deploy new features quickly and safely if organizations have already implemented feature flags, which in turn could potentially reduce application outages.

As mentioned earlier, downtime can have ramifications for organizations, and it is apparent from the research findings that application development errors have the same effect. Around seven in ten respondents say that their organization has lost customers/users (72%) and/or revenue (70%) due to an application development error.

Furthermore, respondents from organizations that have experienced an application outage as a result of deploying new features have been heavily impacted. Around a quarter (24%) reported that their organization experienced a decrease in revenue/profit, and more than one in five (22%) admitted that they lost customers/users. It's important that organizations find a solution to overcome these difficulties and minimize the risk when implementing new features, otherwise it could prevent them from progressing – this could be where feature flags can help.

**How difficult is it to deploy new features for applications quickly and safely?**



Asked to all respondents, split by feature flag implementation (500)

# How can feature flags help?

The further along the feature flag implementation process organizations are, the more applications they have.

Those that have already implemented feature flags have an average of 22 applications built by their software development teams that are currently available for use by customers/staff, compared with those that have begun implementing (16 applications) or plan to implement (14 applications) feature flags.

Respondents in organizations that have already implemented, or begun implementing feature flags are more likely to be releasing new versions or updates for application(s) once a week or more, than those that are planning to implement feature flags (70%, 65% and 54% respectively). This demonstrates that if organizations have already implemented feature flags, they are more likely to be able to release new versions/updates to applications more frequently.

Furthermore, those that have already implemented feature flags are adding more new features to each application per year – 30 new features to

each application per year, on average, compared to those who have begun implementing (21) or plan to implement (18) them. We have already seen that organizations that have implemented feature flags are less likely to find it difficult to implement new features quickly, which explains why they are able to add more new features to applications each year. This in turn will also help organizations keep up with ever-changing customer demands.



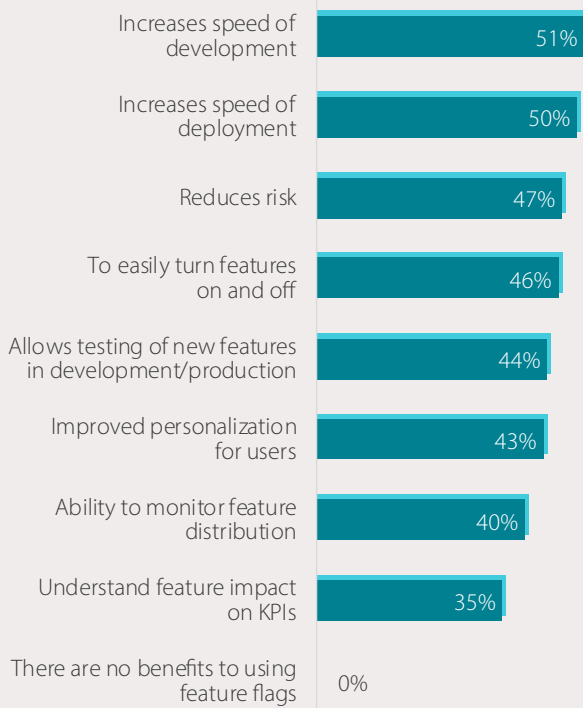
Those that **have or are implementing feature flags** are more likely to be releasing new versions or updates for applications **once a week or more**

## Benefits of feature flags

We have already seen the reasons why organizations are implementing feature flags, but are organizations actually experiencing benefits after implementation?

All (100%) respondents from organizations that have already implemented feature flagging have experienced benefits. Some of the most common benefits that respondents' organizations have experienced from implementing feature flags are increased speed of development (51%), increased speed of deployment (50%), reduced risk (47%), and/or being able to easily turn features on and off (46%).

### Benefits from using feature flags



Showing respondents whose organization has already implemented feature flags (141)

Another benefit cited is improved personalization for users (43%), from respondents in organizations that have already implemented feature flags. And with almost all (96%) respondents saying it is important for their organization to provide different customers/users access to different application features, this further accentuates the benefits for using feature flags.

We've already seen that implementing new application features quickly is important and both developing and deploying new features for applications quickly is difficult. Those in organizations that have already implemented feature flags are less likely (56%) to say that it is difficult to develop new features for its applications quickly, compared with those that have begun implementing (71%) and those that are planning to implement (80%) feature flags. This last point strengthens the findings that feature flags will not only increase speed of development and deployment for features, but also make it easier for organizations, helping to gain a competitive edge.



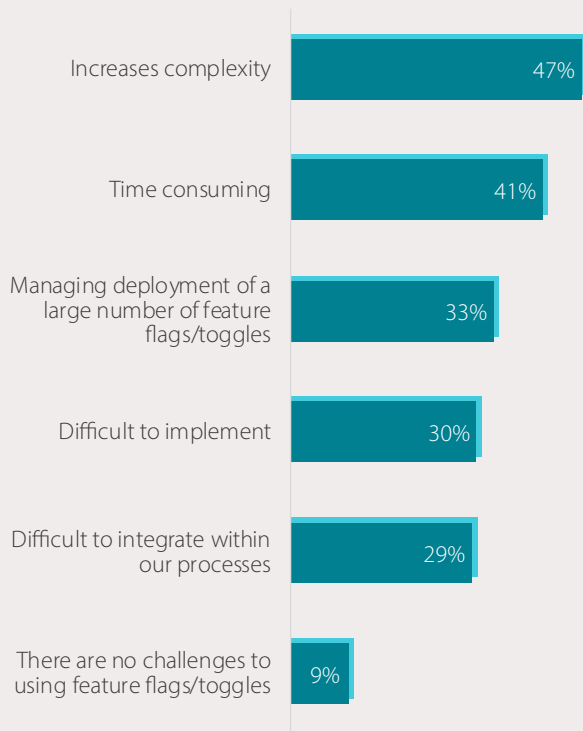
Those that have already implemented feature flags are **less likely (56%)** to say that it is **difficult to develop new features for its applications quickly**

In addition, over nine in ten (94%) agree that enabling a switch to turn application features on and off easily is important, which again, is another benefit of feature flagging. With a switch and reduced risk, would these benefits prevent application outages? Respondents report that enabling an on/off switch for features does reduce the risk of downtime for customers which potentially may also reduce complaints, and avoid the issues outlined above.

### Solving feature flags challenges

However, as with anything, implementing feature flags is not without challenges. The most common challenges experienced/expected to be experienced from using feature flags, are increased complexity (47%), it being more time consuming (41%) and/or managing deployment of a large number of feature flags (33%), by those that have already implemented, begun implementing, or are planning to implement feature flagging.

### Challenges from using feature flags



Asked to respondents from organizations that have already implemented, begun implementing or plan to implement feature flags (477)

Over half (56%) of respondents from organizations that have already implemented, begun implementing, or are planning to implement feature flagging, report that their organization has built/are building/planning to build feature flagging management software in-house. However, this may imply that they are aware of the benefits, but not entirely conscious of the challenges that may arise.

Almost nine in ten (88%) respondents from organizations that have built/plan to build feature flagging management software in-house, would at least consider moving to use a third-party supplier for feature flagging management software. This clearly displays the difficulties that organizations are experiencing with feature flags, and demonstrates that deployment and upkeep process cannot be taken lightly.

Respondents from organizations that are using/plan to use feature flagging software management from a third-party supplier or are moving/would consider moving to a third-party supplier, state that the reasons they are using software from a third-party supplier is because the cost of in-house development is higher (37%), the system needs to have more capabilities than previously planned (32%) and/or it is more complex than previously anticipated (29%). This emphasizes that using a third-party supplier for feature flagging management software can be very beneficial for organizations, and potentially help them overcome the challenges that might arise.

# The future of feature flags

We have already seen that the majority of organizations have implemented or are planning to implement feature flags because of the range of benefits that it will provide.

But what does the future hold for features and the use of feature flags? Almost nine in ten (88%) respondents that know what feature flags are, say that modern software development includes feature flagging and more than four in five (81%) of the same group, think that the use of feature flags will increase over the next 12 months. This means we could expect the average of 30 feature flags per application to increase in the next 12 months.

But is the use of feature flags limited to enhanced development and deployment of features in organizations? Of respondents that use or plan to use agile methodologies, almost all (97%) say that feature flags are important for these, highlighting that it is not only limited to features and can have other benefits for organizations. So what agile methodologies are being used by organizations?

## Agile methodologies

Agile methodologies are becoming increasingly more prevalent today, with organizations developing modern software development practices to assist in becoming more successful. DevOps is the agile methodology that is most likely (58%) to be in used in respondents' organizations, closely followed by continuous delivery (55%) and continuous integration (52%).

Respondents in organizations that have already implemented feature flags are more likely to be using DevOps (72%), continuous delivery (72%) and continuous integration (65%), than those that have begun implementing (60%, 54%

and 56% respectively) or those that plan to implement feature flags (46%, 41% and 38% respectively). Organizations that have implemented feature flagging are more likely to be engaging in modern development software practices. Perhaps organizations that have implemented feature flags are more advanced across all aspects, not just in terms of features?

### Agile methodologies in use

	Currently use	Plan to use	No plans to use	Not familiar with term
<b>DevOps</b>	58%	31%	8%	2%
<b>Continuous delivery</b>	55%	36%	8%	1%
<b>Continuous integration</b>	52%	40%	5%	2%
<b>Continuous deployment</b>	50%	39%	9%	2%
<b>Squad framework</b>	35%	38%	17%	9%
<b>Scrum</b>	28%	40%	17%	15%

Asked to all respondents (500)

Unsurprisingly, only half (50%) of respondents' organizations are currently using continuous deployment. This goes one step further than continuous delivery ensuring there is no human intervention – every change that passes through the production pipeline is released to customers meaning that there is no longer a 'release day' and takes the pressure off the software engineering/development team.

There are some agile methodologies that are not widely in use in respondents' organizations yet, such as squad framework (35%) and scrum (28%) with around one in ten respondents (9%) saying they are not familiar with the term squad framework and almost one in six (15%) saying the same for scrum. This implies that organizations that have implemented all of the agile methodologies are likely to be ahead of the game.

The most common reasons to use agile methodologies is to improve quality (59%), increase efficiency (58%), and improve customer satisfaction (43%), cited by respondents that are in organizations that use agile methodologies.

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**Organizations are finding it difficult to develop new features for their applications quickly, and to deploy them quickly and safely, yet the importance for organizations to do this is clear**

**To find out more information about what feature flags can do for your organization, please contact [info@rollout.io](mailto:info@rollout.io)**

## Conclusion

Feature flags are becoming widely used within organizations to help them manage the ever-changing demands from customers and stay ahead of competitors.

Not only will feature flags help reduce the risk and prevent application outages, but they will also provide more personalization for users – both of which, could reduce customer complaints and improve customer satisfaction.

Feature flags are allowing organizations to continuously improve applications by implementing new features to keep up with customer demands. However, as with anything, organizations are realizing there are challenges involved in implementing and managing feature flags. Not only is the cost of in-house development higher than expected but managing feature flags is also more complex than previously anticipated.

Feature flags are also important to agile methodologies, and organizations that are continually developing, are likely to be implementing these as well.

With the number of feature flags set to increase over the next 12 months, organizations may find that more help is required to manage them effectively, potentially with the assistance of a third-party supplier.



# Methodology

**500**

software  
decision makers

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**4**

countries

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**100+**

employee  
organizations

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**Private**

sectors

Rollout and Atlassian commissioned independent technology market research specialist Vanson Bourne to undertake the research this report is based on.

In September and October 2018, the quantitative study was carried out, interviewing 500 decision makers for software development or those involved in software development in organizations. Respondents came from the US (200), the UK (100), France (100) and Germany (100).

Respondents' organizations have 100 employees or more and a software engineering/development team of at least 20 employees or more. All of respondents' organizations are within the private sector.

Interviews were conducted online using a rigorous multi-level screening process to ensure that only suitable candidates were given the opportunity to participate.

### **About Rollout.io:**

Rollout.io is a feature delivery and management company that accelerates software development and release and minimizes the risk of deploying new code. It is the only unified platform for feature delivery, experimentation, and application-layer remote configuration. Built for engineers, developers and product managers, to rollout, rollback, test and adapt features at scale, in real time. Rollout gives teams full visibility and control of all application features to deliver the right feature to the right user at the right time. Founded in 2014, Rollout has offices in San Francisco and Tel Aviv, Israel. Learn more at [www.rollout.io](http://www.rollout.io).

### **About Atlassian:**

Atlassian unleashes the potential of every team. Our collaboration software helps teams organize, discuss and complete shared work. Teams at more than 131,000 customers, across large and small organizations - including General Motors, Walmart Labs, Bank of America Merrill Lynch, Lyft, Verizon, Spotify and NASA - use Atlassian's project tracking, content creation and sharing, and service management products to work better together and deliver quality results on time. Learn more about products including Jira Software, Confluence, Trello, Bitbucket and Jira Service Desk at [www.atlassian.com](http://www.atlassian.com).

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