



# DevOps State Report Turkey

2019-2020



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# Foreword

As Continium, we are delighted to present you Turkey's first DevOps State Report, focusing on the current situation and maturity of DevOps transformation in Turkey. It has been exactly 10 years since DevOps was first coined as a term by Patrick Debois. The term "DevOps" has been used to refer to processes, culture, mindset and most importantly to digital transformation over the course of time. DevOps State Report Turkey 2019-2020 is focusing on the process and maturity of digital transformation in information technology industry.

For the last ten years, information technology professionals are observing an ever accelerating transformation in the way they manage business. DevOps State Report Turkey 2019-2020 has been designed to detect and showcase how DevOps and Agile approaches have contributed to the abovementioned digital transformations. We aimed and therefore targeted several different industries in order to see as many viewpoints as possible to provide a better understanding of DevOps maturity of enterprises.

Being the ever first report focusing on DevOps processes, DevOps State Report Turkey 2019-2020 has aimed to reveal not only the DevOps transformation but also how enterprises are handling the problems and crisis at the same time. Accordingly, the DevOps tools, practices and overall DevOps adoption of the enterprises provided by this report will enable you to draw a roadmap and achieve DevOps success faster in your own organisation.

Last but not least, we would like to thank all our contributors who have spared time to answer and complete the survey.

Regards,  
Continium Enterprise DevOps Services

# Key Findings

“Sustainable success requires bottom-up practices and top-down support”

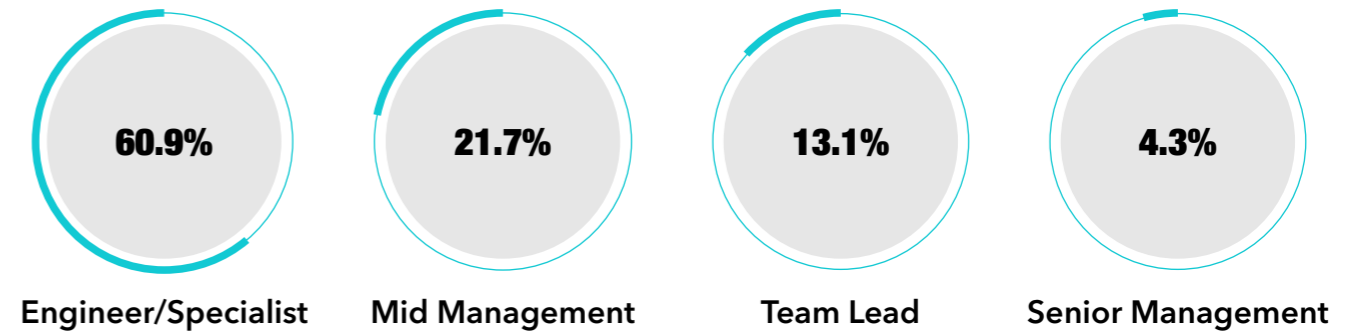
DevOps State Report Turkey 2019-2020 has aimed to bring you the DevOps maturity of organisations. You will find below the five key findings we would like to emphasise for information technology professionals.

- 1** There is a certain awareness and excitement regarding DevOps and its practices across the industry. It has been recognized as the logical next step of agile journey. Hype is on the top.
- 2** It is one of the surprising and fortunately positive outcomes of survey, recognizing DevOps as cultural and engineering change at the same time. Just like a reflection in the mirror.
- 3** One of the ultimate metrics of DevOps is the lead time, time required to deploy changes to production. Examining this metric, we may conclude that Turkey's IT industry is in the middle stage for DevOps maturity, delivering features and fixes in scope of days and weeks. It is possible and expected to see a decrease in metrics favoring customer satisfaction and market competition. Faster delivery, better results.
- 4** Many organizations just started to benefit some of the DevOps practices leveraging quality. However, some practices do not draw enough attention. Although there is interest and focus for Containerization, Microservices and some others; Infrastructure as Code, Static Analysis and SecOps are not that popular. There is a long way ahead us.
- 5** Even though there are diverse ways of DevOps adoption, organizations mostly depend on traditional approaches. They build up a DevOps team and expect them to foster practices within the company. This way might be useful as the first step of maturity, but it must be known that such a formation is possibly wrong. That will not work. Any change must be internalized and supported by the entire population of the company.

# Survey Questions & Analysis

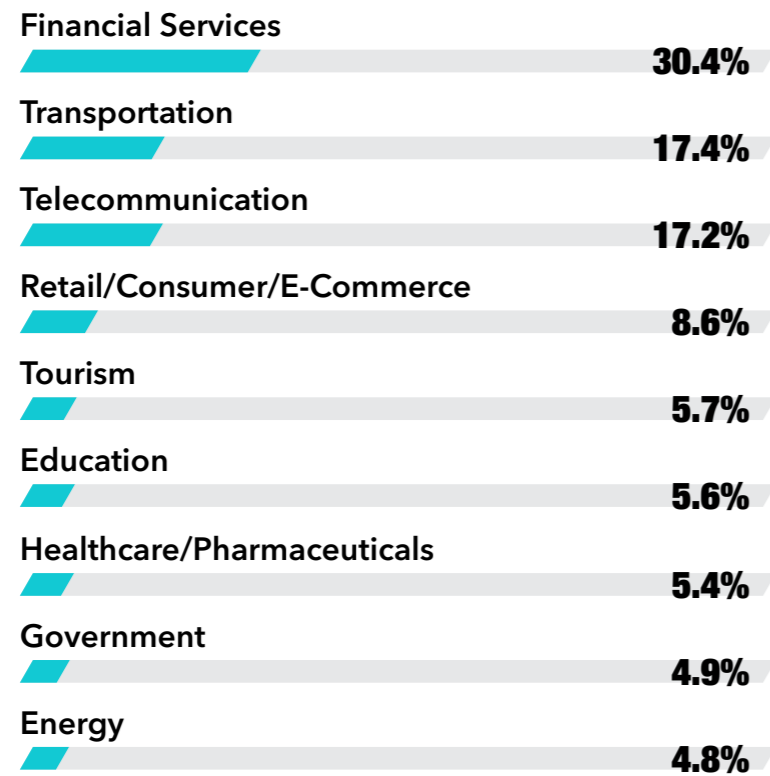
“Contributors of the report will be announced digitally after necessary consent statements are acquired according to the scope of GDPR.”

## What is your role in the organization?



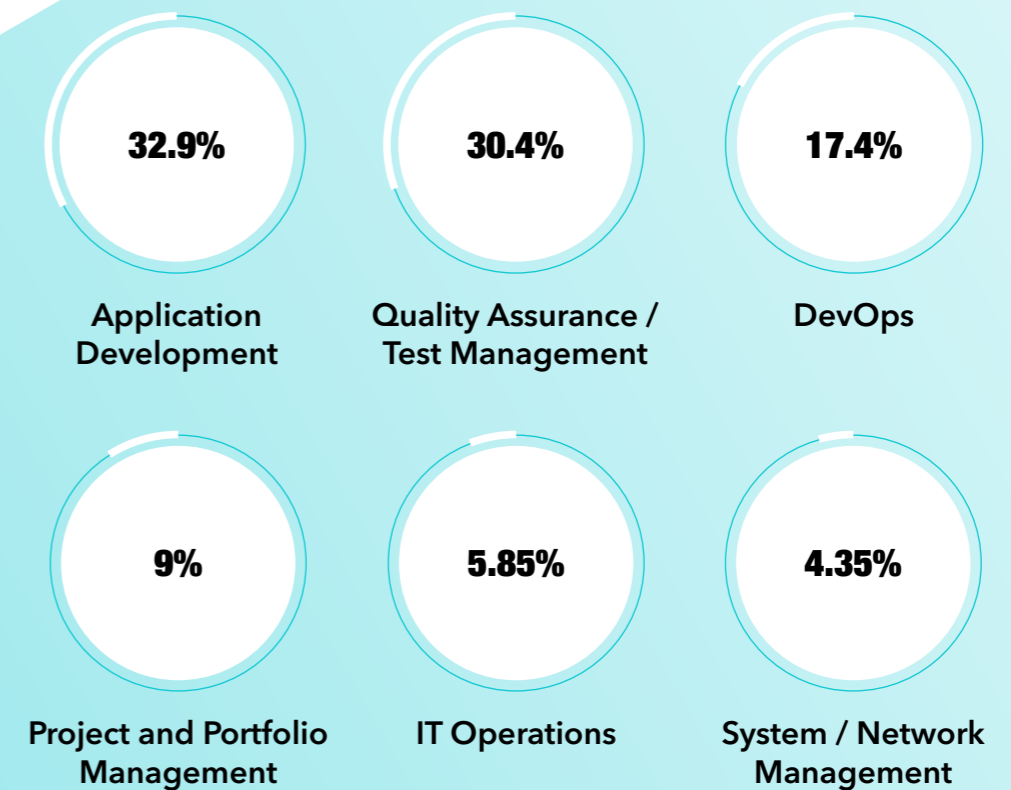
DevOps State Report Turkey 2019-2020 has reached to information technology professionals especially focused and specialized in DevOps practices in various industries. The majority, 60% of the survey respondents, has been titled as engineers or specialists. 13% of the contributors are working as team leads in their companies. The ratio of professionals with mid management titles is 21% while there seems to be 4% positioned as senior managers.

## Which industry is your organization in?



DevOps State Report Turkey 2019-2020 has accomplished to reach various industries as it aimed to showcase the layers and levels of agile and digital transformation as a broad spectrum of practices. Accordingly, 30% of our respondents are working in financial services. Respondents answering from the telecommunication and transportation industries are 17% each. 8% of the sample group is from Retail&Consumer industry while Healthcare/Pharmaceuticals professionals are 5%. Government and Energy industry professionals are 4% each. Lastly, professionals working in Education and Tourism industry are 4% each.

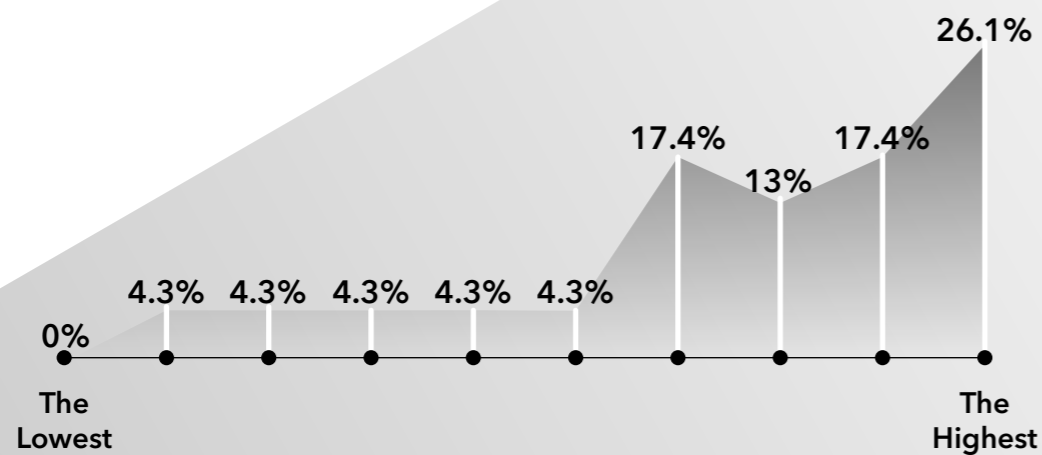
## What department do you work in?



The third question of the report was regarding what departments the report audience is working at. A significant amount of professionals have experiences in software development practices in the field of DevOps. Almost 33% of the survey respondents are working in Application Development. Another considerable majority is from Quality Assurance & Test Management departments since they make up 30% of the overall respondents. 17% of the respondents working in DevOps departments of their organisations. 9% of the survey respondents are working in Project and Portfolio Management divisions. The ratio of the respondents working in IT Operations departments is 5% while it is 4% in System/Network Management.

## Does DevOps mean Cultural

**Change to you?** (1 being the lowest, 5 being average, 10 being the highest)



### ANALYSIS OF THE CURRENT SITUATION

According to current perception, DevOps is substantially recognized as a cultural change. Contributors tend to see DevOps as a cultural matter rather than a process or tool. Even though this statistic is solely not enough to assess the recognition of the subject, it might be counted as an indicator of a solid perspective.

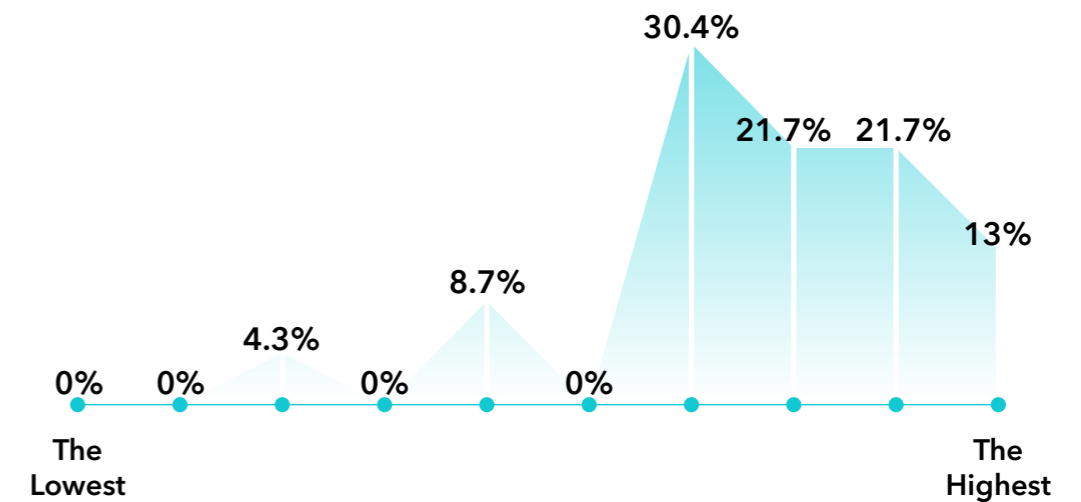
### FUTURE PREDICTIONS

Although the majority of the professionals have the right perspective on the subject, there is a little ambiguity about the definition. While some people think it is only about culture and communication, some argue it is an engineering change, and some others think it is both. Actually, there is not an agreement regarding the definition. It is still a controversial issue in the industry and this controversy seem to continue at least in the near future.

From a consultant's perspective, it is just like the story of the blind men and the elephant. Everyone describes DevOps as he/she experiences. It is all about angle you look from, all perspectives are correct at the same time.

## Does DevOps mean Engineering

**Change to you?** (1 being the lowest, 5 being average, 10 being the highest)



### ANALYSIS OF THE CURRENT SITUATION

Survey results indicate that people also consider DevOps as an engineering change in addition to cultural. The majority of respondents, distributed between seven to nine scale, is a sign of consideration as the next step of digital transformation for higher product quality. DevOps supports production pipelines, directing "how" to engineer the software. A catalyst to agility.

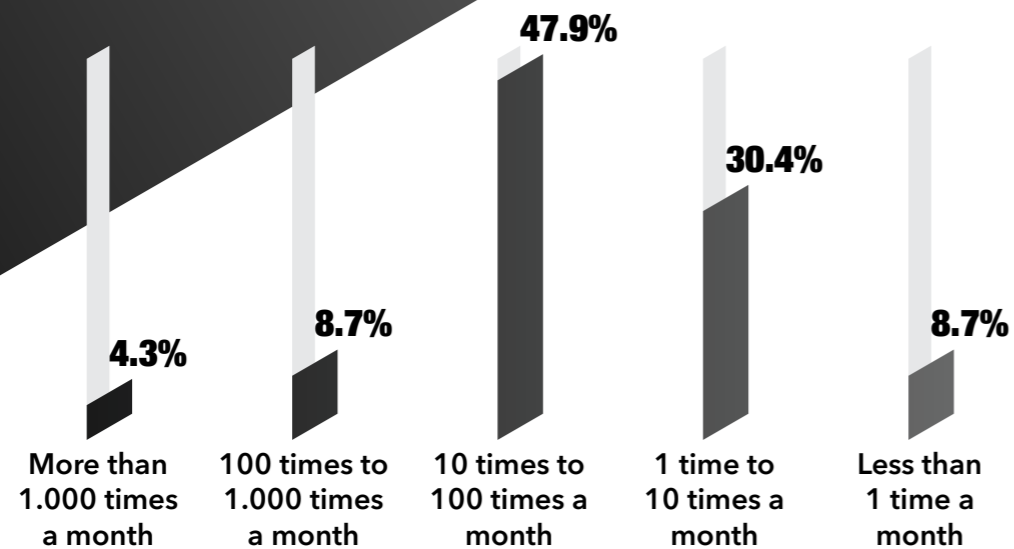
Another result is that some people think DevOps as a cultural change rather than engineering, which is a possible result of the survey. Yet the position of Continuous Integration/Continuous Delivery is unclear, some argue that is about engineering change, which makes DevOps more related to culture and collaboration.

### FUTURE PREDICTIONS

It is not easy to say that distribution of answers will ever change to a direction, but recognition of the subject inevitably will increase. People possibly are going to recognize that agile methodologies such as Scrum and Kanban should be supported by DevOps practices towards a successful transformation.

Moreover, the demand for highly skilled employees in DevOps expertise will exponentially increase in the market. It is very likely that supply cannot meet the demand, and the average salary rate of "DevOps" people will continue to rise in the near future. Turkey's IT industry is on the edge for this phenomenon.

## How often does your organization deploy to production for your primary application?



### ANALYSIS OF THE CURRENT SITUATION

This result indicates most of the participants deploy their primary application to production more than once on a daily basis. Also, the majority of participants have the habit of making deployments more than once on a weekly basis. That shows organizations do not hesitate to make changes and keep their primary application updated. According to this information, many of these teams have the maturity of taking advantages from continuous DevOps practices.

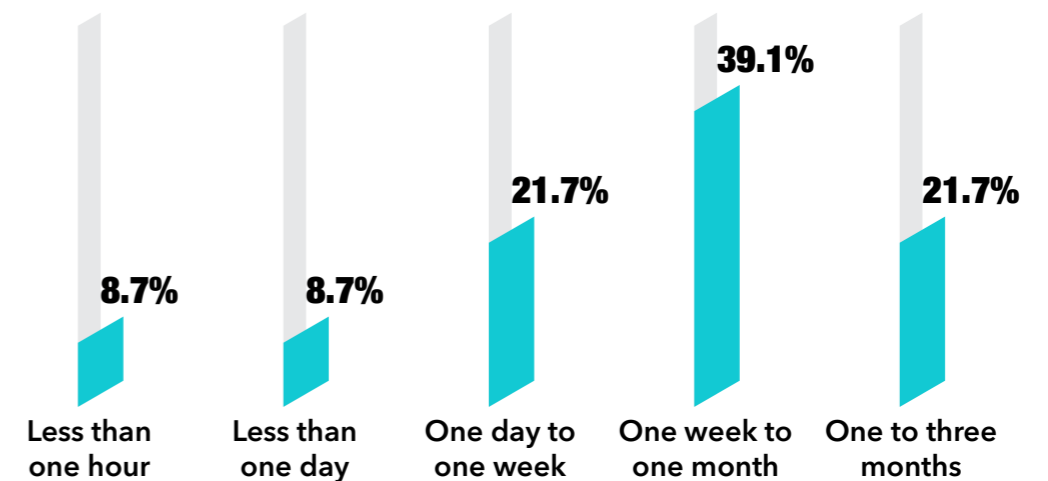
On the other hand, it was observed that the teams which performed less than one deployment per week still dealing with possible problems when they want to deploy new features.

### FUTURE PREDICTIONS

Although it is common to implement more than one deployment per week, in the future it is more desirable for teams to implement one or more deployments on a daily basis, as they gain more confidence about using DevOps practices.

Following that, teams which are performing less than one deployment per month will possibly increase their deployment frequency to more than once per month or week. However, the majority of these classifications will still remain 10 times to 100 times a month as close to 50%.

## How long does it take to go live a new code commit, from repository to production?



### ANALYSIS OF THE CURRENT SITUATION

The journey of scripted code through to the production is like an assembly line for software delivery. The earlier organizations finish this line, the sooner they will experience the benefits of newly developed features.

Since this question has multiple choices, results indicate how fast can they push new commits in different conditions.

The majority of participants still have concerns delivering their code to the production which take weeks. They prefer cumulative deployments instead of delivering newly developed features separately. The main reason for this conservativeness can be their development strategy or inconfidence regarding possible regression effects.

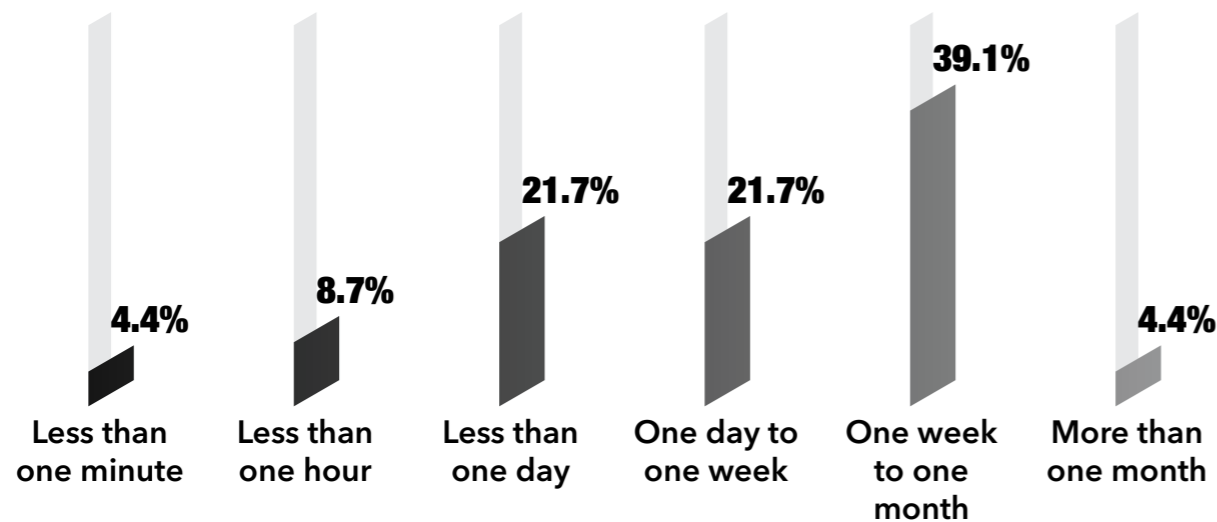
### FUTURE PREDICTIONS

In the future, as organizations conduct blameless post mortem culture, IT teams will feel liberated to go live just after the development has been completed. Nevertheless, this conservativeness is expected to continue depending on development strategies.

By implementing the DevOps best practices, organizations become able to send their commits to production faster. That will lead to an increase in the number of participants who can go production in a week and even a day.



## What is the "Mean time to Recovery" for your primary application?



### ANALYSIS OF THE CURRENT SITUATION

At the pinnacle of resiliency, mean time to recovery (MTTR) should not exceed one business day and we can see nearly half of the participants manage to recover their application faster than that. The majority of the participants having problems which lasts longer than a day indicates that these teams have to improve their deployment strategies and take their recovery scenarios seriously.

Even though the distribution of the respondents who have stated to recover faster than a day and hour gives satisfactory results, the data indicates organizations have experienced some recovering practices but still they need to make use of automation for MTTR optimisation.

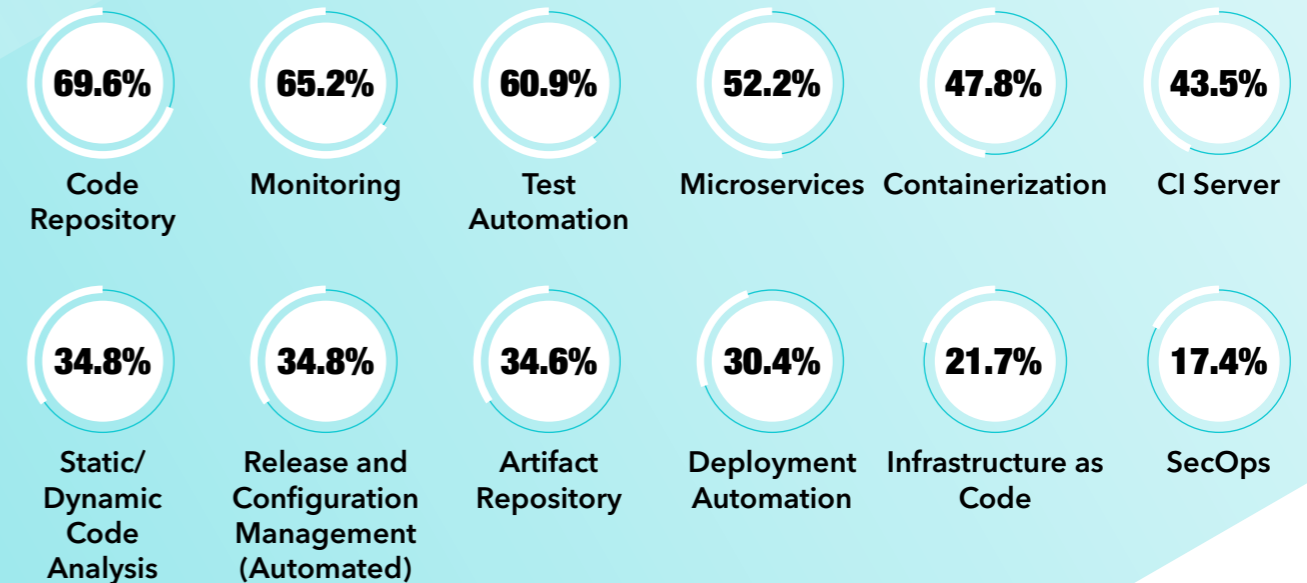
### FUTURE PREDICTIONS

As the use of applications increases, the consequences of errors that occur will be severe. In this context, the faster organizations recover from failures, the less likely they suffer the consequences of these failures. Recovery time will become more important in the future in order to keep high customer satisfaction, but this topic still does not have a popularity in the organizations.

Using chaos engineering practices, teams can learn a lot from failures in applications, and they will discover new solutions to make their systems more flexible, allowing improvements in times of recovery.

## Which tools/practices do you have in your organization?

\*multiple selections were allowed.



### ANALYSIS OF THE CURRENT SITUATION

There are many practices and tools that can be benefited for DevOps & Continuous Delivery journey. Version control, assumed to be the first step towards DevOps maturity, is the one most widely used by more than two thirds of the respondents. Monitoring and Test Automation are following Version Control. Another good news is Containerization and Microservices adoption in the organizations. Nearly half of the participants state that they use these practices in their organization. Microserviced and properly containerized applications are key to higher levels of maturity.

However, the ratio of using Infrastructure as Code and SecOps are relatively low compared to others, which is no surprise. As Infrastructure as Code and SecOps are advanced techniques, adoption rates rise after other practices. Indicators are promising, but there is still a long way ahead.

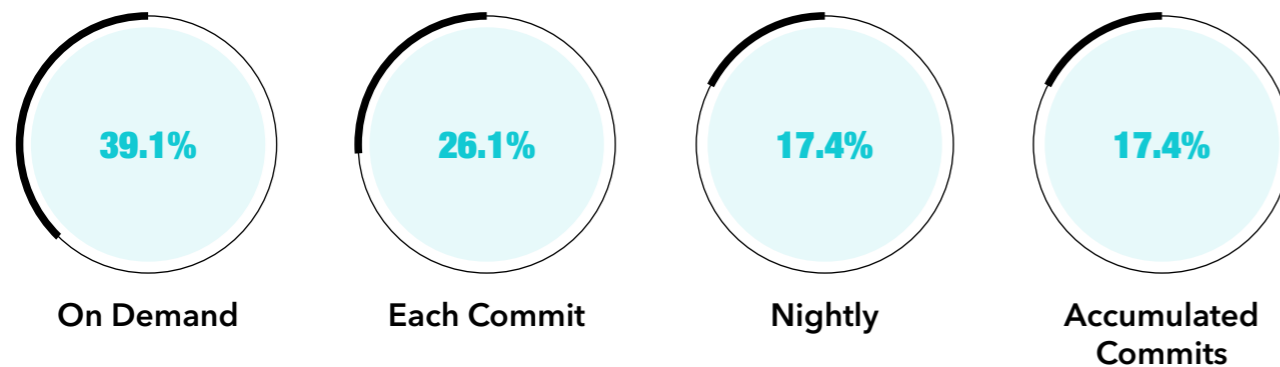
### FUTURE PREDICTIONS

SecOps and IaC(Infrastructure as Code) will be the next hypes for the industry. Comparing benefits with costs, company executives and people with fast ROI expectations will not hesitate to invest in them.

Treating infrastructure, configuration and pipeline as code come with great benefits, leveraging much faster, robust and reliable systems. The idea behind Everything as Code concept is that infrastructure, security, compliance and operations are all described and treated like application code in a way that they follow the same software development lifecycle practices.

Security also will be a key matter for information technology companies in the future, as it is today. Embedding security checks into the pipeline brings higher control over software and also lower the risk. At least, Static, Dynamic Analysis, Penetration Tests must be added to the pipeline and run for each commit of change. This is the first but also effective line of Security, preventing more than 95% of possible vulnerabilities.

## How frequently your project is built? (with CI Server, if you have any)



### ANALYSIS OF THE CURRENT SITUATION

Organizations might be roughly classified into three DevOps maturity groups; Low Performing, Mid Performing and High Performing. Build frequency is one of the key metrics to look for this classification.

In the survey, nearly 39% of the participants state that their projects are built on demand through Continuous Integration pipeline. Another group, 26% of respondents declare that their CI system build the project after each commit through pipeline. The data show us a gap between DevOps practitioner companies. It is a common pattern for new technologies in adaptation phases.

According to the data, low performing organisations and high performing organizations are each outnumbering mid performing organisations. This phenomenon is called J-Curve, a common pattern in the industry.

### FUTURE PREDICTIONS

In the future of industry, an increase in DevOps maturity is expected. As a result of maturity increase, pipelines will enable checking the effect of each commit through lifecycle.

The biggest obstacle today for such an approach is limitations of application and database architecture, not the technology itself. Monolithic applications and physical databases do not allow teams to configure pipeline to provision test environments. It is still a labour intensive and time consuming process. Eventually, usage of microservices and containerized application will make it possible to create the environment each time from the beginning, leveraging more frequent builds.

## Do you merge to trunk at least daily in the code repository?



### ANALYSIS OF THE CURRENT SITUATION

It is one of the most recommended practices of Continuous Delivery: Daily Merge. Even though more than half of the respondents state that they merge their changes to trunk at least daily, it is not enough.

As known, accumulated and not merged changes on branches bring a significant amount of risk for conflicts. The bigger the merge, the bigger the conflict.

Daily merges force developers to solve conflicts as soon as they arise. Consequently, code crushes become less probable compared to longer intervals of merge.

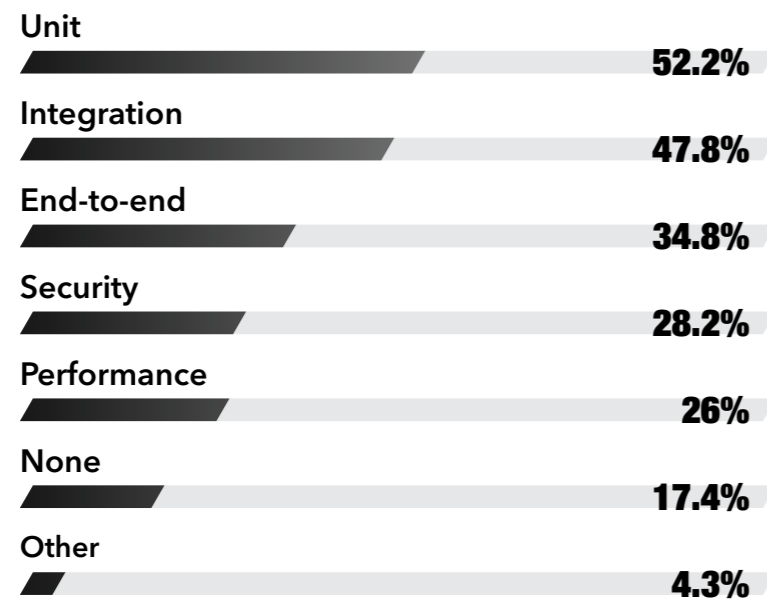
### FUTURE PREDICTIONS

Undoubtedly, daily merge percentage will increase. Even multiple daily merges become a common practise for developers who care about the quality of their software. Again, it is related to organisation culture, ownership and responsibility.

Continuous merging is not a hard practice, but definitely require discipline. Developers must be trained and coached to practice it. Branching strategies also can help developers to find the best way for themselves. It should be an organizational attitude rather than a personal initiative.

## What types of automated tests do you have in your projects?\*

\*multiple selections were allowed.



### ANALYSIS OF THE CURRENT SITUATION

Distribution of the automated test levels tend to be ideal, called the Test Automation Pyramid, according to results. An important amount of unit tests, and a comparatively less integration tests and lastly even less user interface tests. Of course, it does not directly indicate the number of automated test cases, but correlation between them is inevitable.

Such a proportion balances disadvantages with advantages favoring test automation in terms of flakiness, business coverage, code coverage and execution time. It is strongly advised to form up a test automation pyramid towards efficiency and effectiveness. Consequently, gains from automation become the highest possible for the sake of this approach.

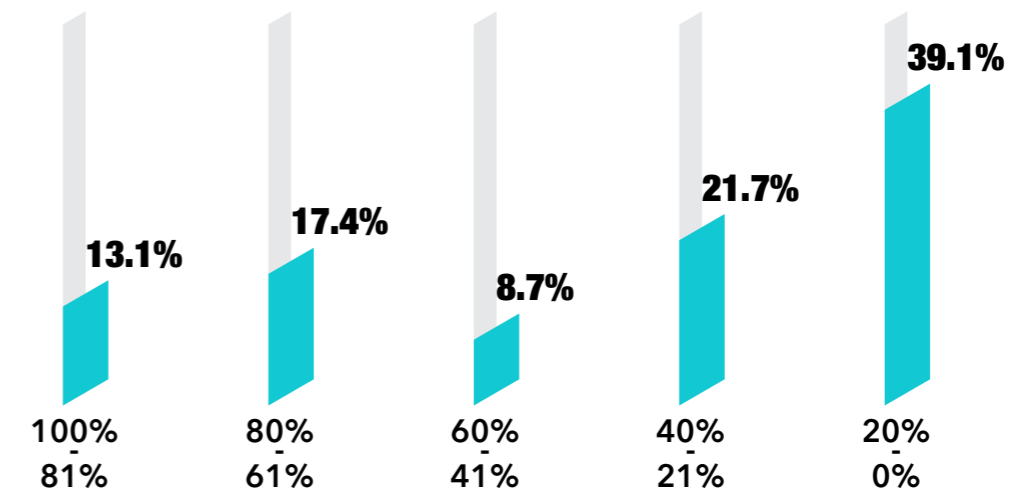
Organizations also automate non-functional tests besides functional. Nearly one third of the respondents state they automate performance and security tests in their organization, which is a sign of higher test automation maturity.

### FUTURE PREDICTIONS

Higher adoption of test automation should be expected in the industry. Although there is a certain interest in automation, wrong motivation and improper execution lower the benefits of automation. Unfortunately and frequently, it becomes a resource consuming activity with no sign of hope.

However, it is a stage of progress (in other words J-Curve Pattern). Organizations will eventually understand what they should expect and professionals will learn how to engineer the structure in the best way. For middle performing organizations (at the bottom of J-Curve), it takes months to years for such an enlightenment. During this period, it is important not to lose confidence and keep on trying.

## What is the line coverage ratio of automated unit tests in your project?



### ANALYSIS OF THE CURRENT SITUATION

The answers reflecting J-shape distribution indicates participants mainly have two different approaches in terms of automated unit testing. These are those who have more than 60% coverage and which has less than 40% coverage. Majority of participants accumulated under less than 50% coverage which can lead to the undetectable defects at their delivery pipeline.

### FUTURE PREDICTIONS

Unit test stands for the backbone of software quality assessment in terms of DevOps. As the software testing gains its importance globally, coverage of unit tests will increase. Still, the organizations will have to avoid the common pitfall of automated testing which is "Ice-cream Cone Anti-Pattern".

Unit tests can be executed in less time and on larger scales. Increasing the coverage of unit tests will demonstrate its benefits in a period of time through the Application Lifecycle.

## Do you archive your artifacts in a binary repository?



### ANALYSIS OF THE CURRENT SITUATION

Storing artifacts in shared space as binary helps members in the organization to be able to get the latest or any version of an application which they require. This kind of repository helps to eliminate "It works on my machine" argument and outdated documentation. It also makes easy to reproduce the version used by customers and help for better management on the artifact life cycle.

36.5% of the participants taking advantages of the binary repository, but the majority of participants are still relying on old traditions and cannot benefit the advantages stated above.

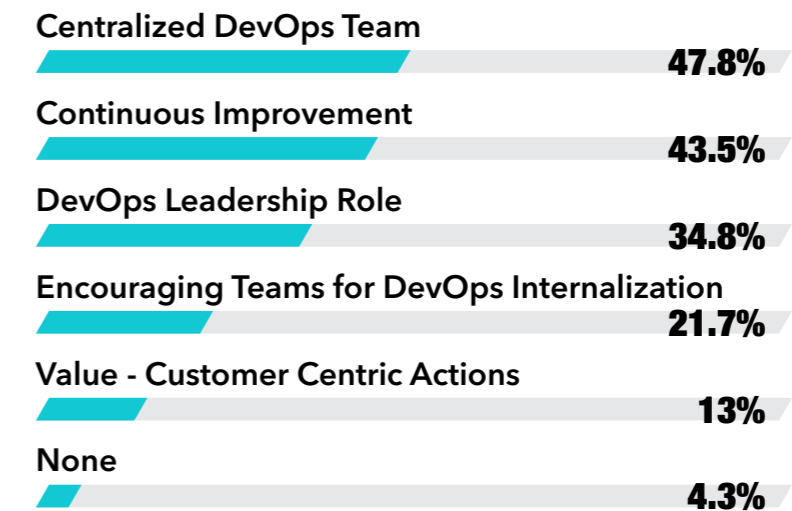
### FUTURE PREDICTIONS

Since they have low cost and high benefit ratio, the binary repository is predicted to be used at higher rates in the future, in order to achieve higher DevOps capability.

Any artifact produced or needed in the CI/CD process is stored in the binary repository and made available to the tools in the pipeline, thus helping to overcome the snowflake effect. And also very helpful for reproducing application defects.

## Which do you use as a part of DevOps Transformation?\*

\*multiple selections were allowed.



### ANALYSIS OF THE CURRENT SITUATION

According to survey results, building a Centralized DevOps Team is still the leading practice within organizations to foster culture and practices. Nearly half of the respondents state there are separate DevOps roles and teams responsible for leveraging transformation.

The second is the Continuous Improvement, Kaizen culture, which is a practice of Lean movement. This is generally adopted by conservative companies, who are reluctant to change, for DevOps transformation.

The third result we see in the data is DevOps Leadership. Selecting a DevOps leader, an ambassador, to guide teams and organization for the transformation is another trendy approach.

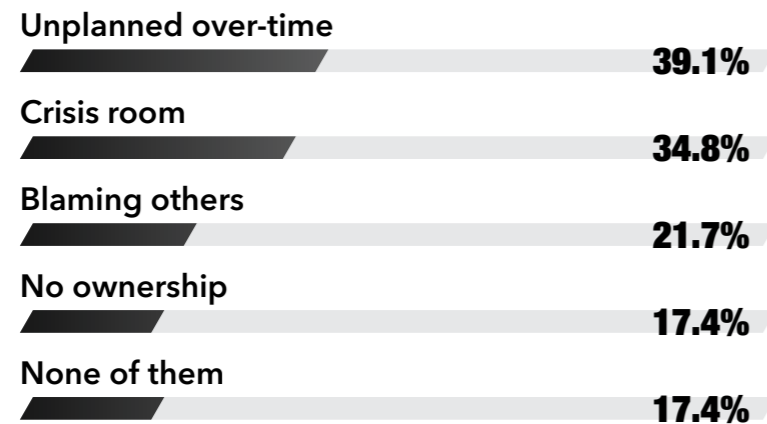
Another way is to empower and coach teams for internalizing DevOps practices, probably most effective but also the hardest. That is why it has ranked fourth in the survey.

### FUTURE PREDICTIONS

In the near future, an increase in the least used practices is expected. Normalization among the options is a possible result of increasing maturity. As there are many ways to catalyst change, there is no right or wrong selection. One might work well for an organization, while it does not in others. It depends on the organizational structure, people and many other factors.

## Do you observe any of the following in case of an application problem/down-time?\*

\*multiple selections were allowed.



### ANALYSIS OF THE CURRENT SITUATION

This was the tricky question of the survey. Participants are directed to reflect negative attitude within the company. Many contributors state that unplanned overtime is a common consequence of application problem/down-times. According to our experiences, companies tend to ease the symptoms of the problems rather than the root causes, in an endless loop. Such an approach only postpones the problems, but not solves them.

The second outcome is crisis rooms. Even though it is an effective practice to solve problems in a relatively short time, it is also an indicator of reactivity. A well-prepared organizational structure should not require to get everyone involved in the situation.

Another result is the blame culture. It is a very toxic attitude for organizations. In those environments, people focus on defending themselves rather than contributing to the solution. A sign of pathetic organizations.

### FUTURE PREDICTIONS

It is hard to say such results will disappear in a short time, but undoubtedly adoption of DevOps will lower the number of troubles. It will not be required to blame each other, as organization can solve the problems within minutes, even seconds. Practices such as Chaos Engineering will teach organizations how to get prepared for unexpected conditions. In fact, not only get prepared but also exercised on a regular basis.

# Conclusion

Since DevOps is a journey, it is always better to see how far you come and how far you need to go. In this way, you can understand where you are and what to do next.

Learning from others is always the fastest and the most trustworthy way to improve as well as to reach your target. Being Turkey's ever first DevOps report, DevOps State Report 2019-2020 is designed to provide you the perspectives you can benefit to get inspiration, learn from other organisations and look at your own. You will also be able to discover the trends as we see promising for the future of DevOps transformation.

It goes without saying that we would always want to hear your feedback and your own experiences of DevOps transformation.

You can reach us at: [info@continium.io](mailto:info@continium.io)

# About

## Enterprise DevOps Services

Continium helps its customers to challenge digital transformation delivering best-in-class engineering consultancy. It is our ultimate goal to empower enterprises through technology and innovation.

As Continium, we have made a quick start in 2019 in the field of DevOps services. We have been partnering with our local and global clients to achieve our ultimate goal, that is: 'empowering enterprises through technology and innovation'. We are fast becoming the number one choice of the region as a DevOps services provider. Continium is also delivering various DevOps trainings customized for software engineers and DevOps professionals.

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