TURKEY SOFTWARE QUALITY REPORT

Agile Testing

2017-18

ISTQB
International Software Testing Qualifications Board

TTB
Turkish Testing Board
www.turkishtestingboard.org

Test Report

CONTENT

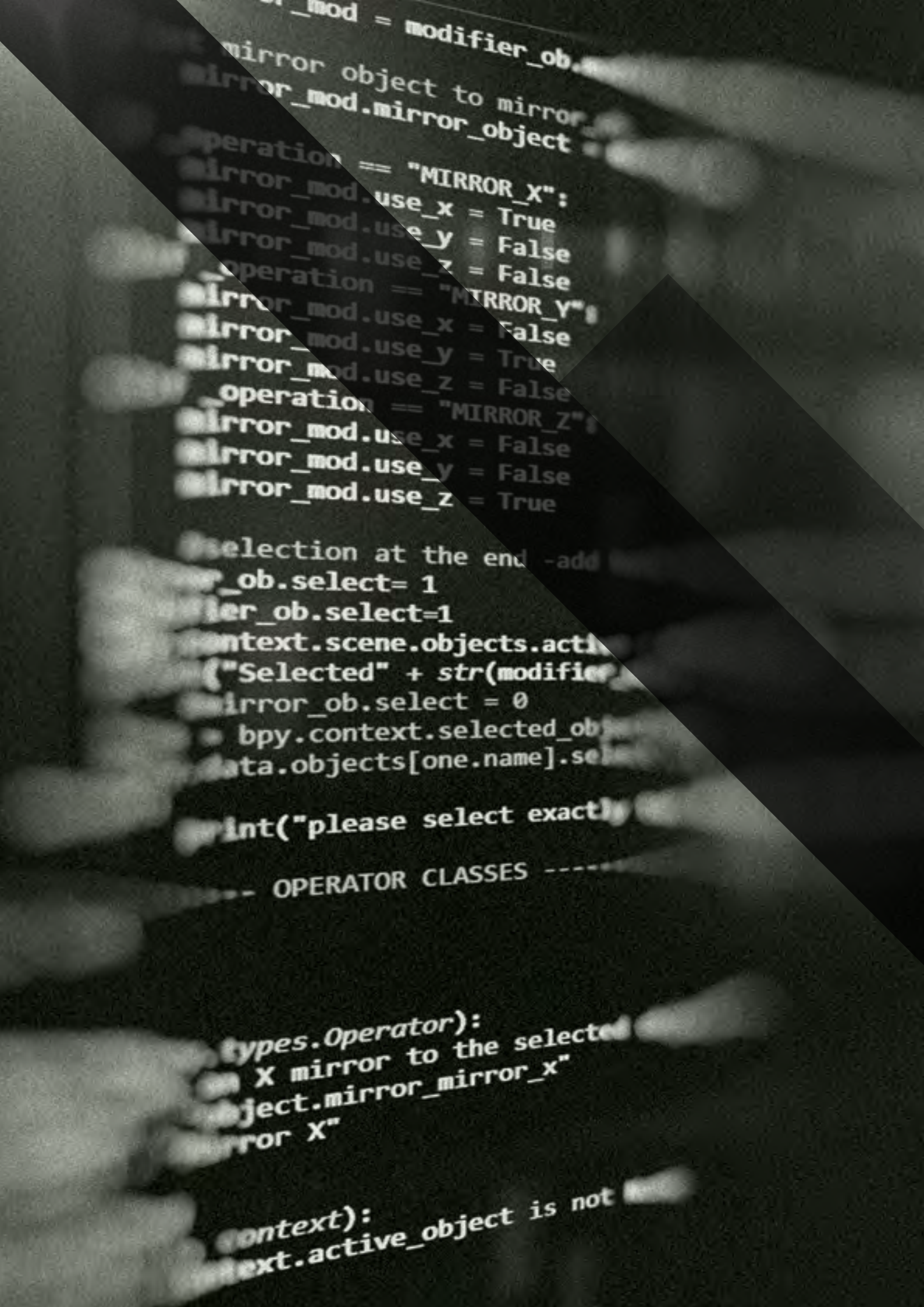
Foreword 3

Executive Summary 4

Survey Questions and Analysis 6

Contributors 23

About 24



FOREWORD

As Turkish Testing Board, we are pleased to bring you the 2017-18 edition of the Turkey Software Quality Report (TSQR) which focuses on "Agile Testing". Apart from traditional testing surveys which solely focus on the technical side of testing, we put emphasis also on the business side of testing. You will find tips and trends about testing activities in agile environments.

The report is designed to help organizations to make paradigm shifts in their mindsets. It not only draws a clear picture of the current situation in the Turkish market but also sets the de-facto standards and trends for future information technology (IT) projects. We hope this report will be a reference point for all decision makers.

With the help of TSQR, we are trying to lay down the foundations of a healthy discussion platform for improvement in Turkish IT market. As a conventional practice, TSQR was presented at the opening ceremony speech of TestIstanbul 2017 (testistanbul.org), initiating a series of keynotes, presentations and discussions.

Regards,

TestIstanbul Strategy Committee

EXECUTIVE SUMMARY

The new age digital customer is connected and demands information at his fingertips. Companies have to respond to the digital landscape with superior products and enhanced customer service. Quality Assurance and Testing will help companies to adapt to the digital revolution by reducing time-to-market, increasing security, performance and customer satisfaction.

This year's research was conducted among 300+ IT and Software Testing professionals from more than 200 companies across Turkey. It reveals a shifting set of primary objectives for the Software Testing and QA functions compared with last year. It's a change that reflects a desire to stay close to the essential objective of testing, which is to prevent serious defects from reaching production, but always related to the higher objectives of customer value and business outcomes.

Development teams continue to adopt Agile practices like Continuous Integration (CI) to build better software faster. What is surprising from this report is the revelation that many teams who believe they are practicing an Agile Testing process are really performing "Agile Waterfall" instead. This presents a huge opportunity for these teams to continue to improve their processes, increase their use of automation and accelerate development even further.

In addition to revealing the prevalence of agile waterfall development, the findings also reveal that the market continues its adoption of Agile, with more than 80% of respondents citing use of an iterative development technique within their teams.

With Agile growing in popularity among competitive organizations determined to bring more products to market more quickly and frequently, Agile and DevOps practices are started to be adopted in large to small businesses. Following takeaways can further be extracted from this year's report;

1. Digital Transformation continues to drive IT strategy and make itself felt in the Software Testing function.
2. Agile and DevOps continue to grow in adoption, with Software Testing making a corresponding move.
3. The emergence of Internet of Things (IoT), Big Data, Cloud and Mobility are disrupting forces with the potential to increase the impact of failures even more.
4. The challenges around managing and driving down the cost of test environments and test data management are getting more and more serious.
5. The continued requirement to find efficiencies at every level in Software Testing remains evident despite this year's success in containing costs.

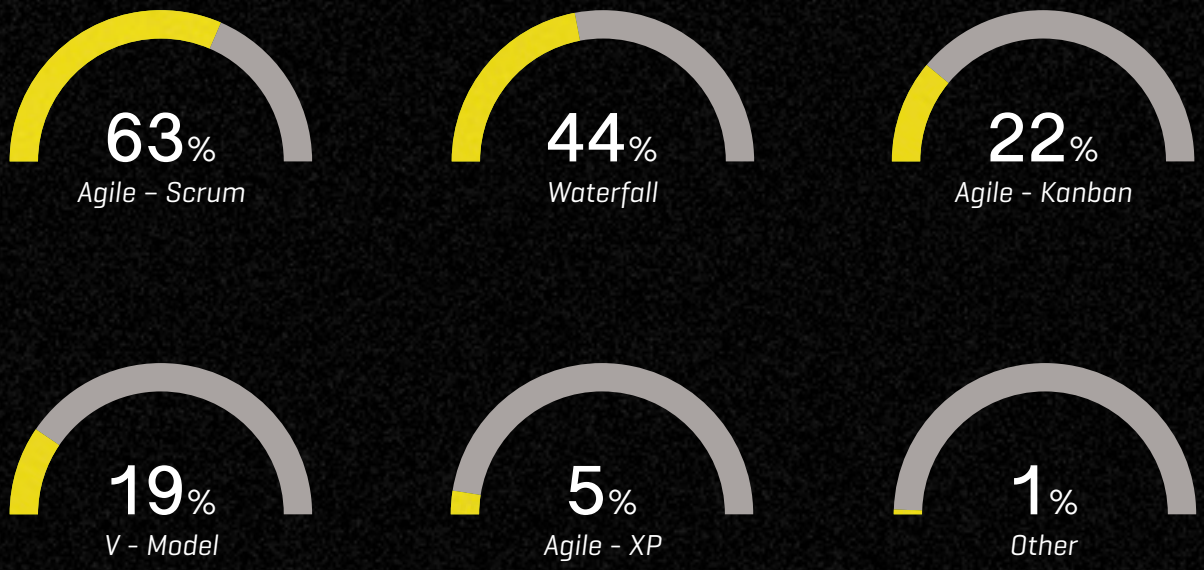
As usual, you can access the softcopy of this report, together with previous reports from turkishtestingboard.org and we are hoping to see you at TestIstanbul 2017 Conference on April 25th to discuss the findings.

QUESTIONS

1. WHICH, **SDLC METHODOLOGIES** ARE USED, IN YOUR ORGANIZATION?
2. WHO IS **RESPONSIBLE** FOR SOFTWARE TESTING ACTIVITIES, IN YOUR AGILE PROJECTS?
3. WHICH AGILE TESTING **PRACTICES** ARE BEING USED THE MOST, IN YOUR ORGANIZATION?
4. WHAT KIND OF **TEST ORGANIZATION** DO YOU HAVE, IN YOUR AGILE PROJECTS?
5. WHAT ARE YOUR TOP TESTING **CHALLENGES,** IN YOUR AGILE PROJECTS?
6. WHICH OF THE FOLLOWING **BENEFITS** ARE THE MOST VALUABLE ONES, IN YOUR AGILE TESTING PROJECTS?
7. WHICH OF THE FOLLOWING **SKILLS** ARE EXPECTED FROM AN AGILE TESTER, IN YOUR ORGANIZATION?
8. WHAT KIND OF **DOCUMENTATION** DO YOU USE, IN YOUR AGILE TESTING PROJECTS?
9. WHAT KIND OF **TOOLS** DO YOU USE, IN YOUR AGILE TESTING PROJECTS?
10. WHICH OF THE FOLLOWING AREAS, DOES YOUR ORGANIZATION PLAN TO **INVEST** MORE, NEXT YEAR?

WHICH SDLC METHODOLOGIES ARE USED IN YOUR ORGANIZATION?

** multiple selection was allowed*



ANALYSIS OF THE CURRENT SITUATION

Results clearly show that; Scrum is the most popular (63%) software development methodology among all the others and the respondents who have selected Scrum mostly represent the domains such as Finance, E-Commerce, Telco and Hi-Tech. On the other hand, traditional models like Waterfall and V-Model are still being used by more than half of the organizations, especially in sectors such as finance, insurance and defence.

Most of the large enterprises are trying to adopt Agile practices, so are in transition periods, as a consequence they do still use traditional software development models in their projects. As an outcome, Agile and Traditional software development methods are currently co-existing in many organizations in Turkish Software Industry.

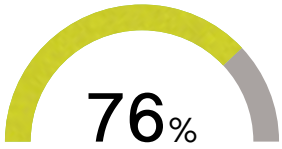
FUTURE PREDICTIONS

"In the very near future, we may expect to see more companies using and adopting Agile. At least, most of the companies will be trying to benefit from Agile practices even they are using traditional methods like waterfall and V-Model.

As experienced so far, every organization is different from each other from many perspectives such as size, products, infrastructure, customers, error tolerance and risks associated, so as the software development methodologies. There will be no specific software development model that can resolve all the problems, as a consequence we will most probably observe several models used in combination and customized for every organizations' needs and dynamics.

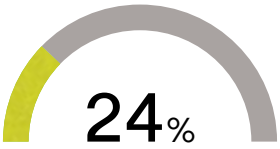
2 WHO IS **RESPONSIBLE** FOR SOFTWARE TESTING ACTIVITIES IN YOUR AGILE PROJECTS?

** multiple selection was allowed*

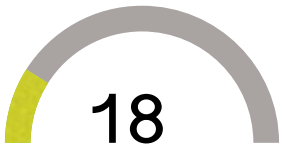


76%
Software Testers, Test Engineers / Analysts

25%
Technical Test Engineers / Analysts



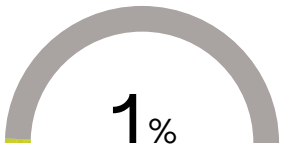
24%
Business / System Analysts



18
Software Developers

12%
Business Units, Product Owners

10%
Scrum Masters



1%
Other

ANALYSIS OF THE CURRENT SITUATION

The disappearance of classical IT roles like Software Tester, Business Analyst, Usability Specialist, Developer etc. in Agile frameworks has raised the question of 'who is responsible for what?'. Surprisingly, the survey results indicate that Software Testers are still the number one responsible professional for software testing activities.

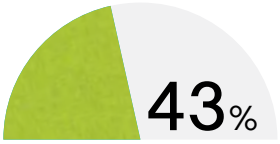
Well, how this happens in a world where no role definition exists other than Product Owner, Scrum Master, and Developer? The answer to this question lies not in the Agile team but in the organizational structure of the companies. Although there is no role called Software Tester in the Agile team, software testing teams still exist in the organizational structure of the companies. Software testing teams, business analysis teams, UX teams and any other kind of team formations specialized in one discipline are necessary for developing specific know-how and expertise in the company, and therefore should exist in their organizational structures. Although team members belonging to these teams get rid of their classical IT titles while joining Agile teams and be part of the development team, they may still call themselves the titles they own out of their Agile team.

FUTURE PREDICTIONS

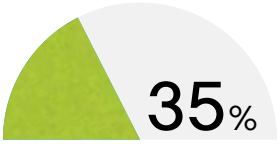
We expect software testing teams, business analysis teams, UX teams, and any other kind of team formations specialized in one discipline to continue to exist in the organizational structure of the companies in the future. But, with the more adoption of the whole-team approach by Agile teams, members of these teams who take part in Agile projects will leave their traditional IT titles and will call themselves the titles defined by the Agile framework they are using. For example, in scrum case, when the question of who is responsible for software testing is asked, these team members will call themselves either product owner, scrum master or development team member other than software tester. This will put more emphasize on being a team and specialized disciplines will grow as core capabilities inside the teams.

3 WHICH AGILE TESTING PRACTICES ARE BEING USED THE MOST IN YOUR ORGANIZATION?

** multiple selection was allowed*



Test Case Review



Test Automation - Regression

Exploratory Testing

Code Review

Test Automation - UI

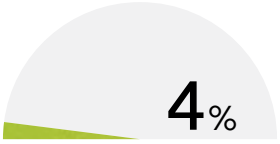
Check List Based Testing

Test Automation - Integration

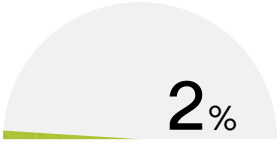
Test Automation - Unit / Component

Continuous Testing

Risk Based Testing



Pair Testing



Crowd Testing

ANALYSIS OF THE CURRENT SITUATION

According to the results, many organizations using Agile methodologies are also very keen on software testing practices. Most of the attendees use at least one or more testing practices to empower testing processes in their organizations.

It is also clear that institutions focus on feedback loops that increase communication between project stakeholders. Another result is that test automation for regression purposes take a step further in Agile methodologies due to frequent release schedules. It is much more required to have a solid automation suite in order to detect regressions and have confidence in the product.

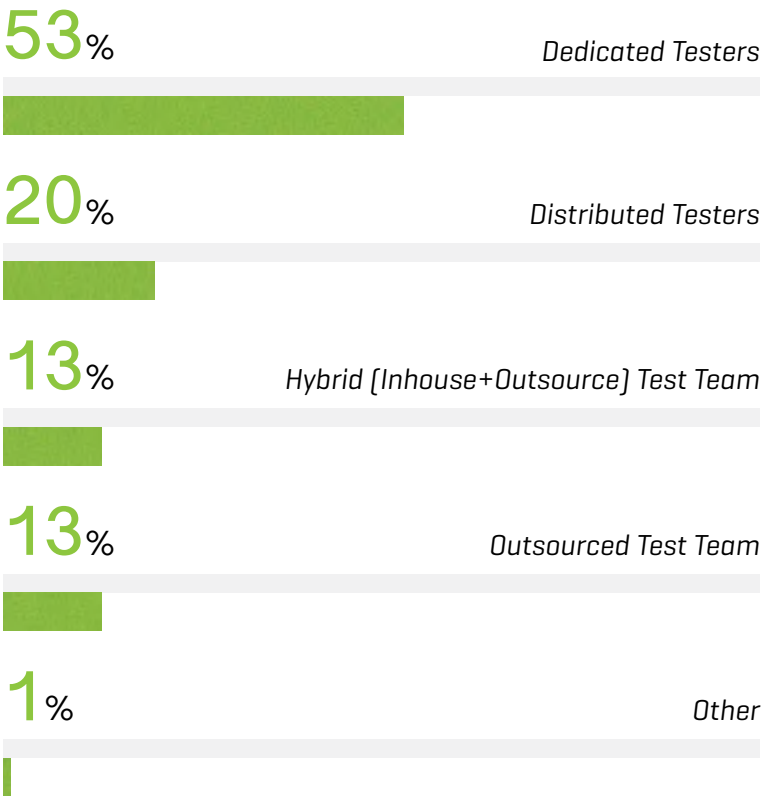
There is also a tendency to find defects as soon as possible in the cycle. Organizations empower quick benefit providing techniques such as exploratory or checklist based testing. By the way, they have chance to easily find randomly scattered defects and do risk-based testing.

FUTURE PREDICTIONS

It is expected that DevOps related testing practices to be widely used in near future. Organizations are required to support their Agile management approaches such as Scrum or Kanban with solid engineering practices such as Continuous Testing or Automatic Environment Setup.

It might be a wise decision to invest in these areas for future prospects.

4 WHAT KIND OF **TEST ORGANIZATION** DO YOU HAVE IN YOUR AGILE PROJECTS?



ANALYSIS OF THE CURRENT SITUATION

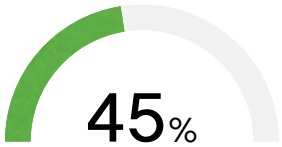
Having test organization consisting of dedicated testers in Agile projects seems to be most preferred organization model chosen with 53% ratio. Survey indicates that majority of organizations are aware of the pivotal role dedicated testers play in Agile teams. More than half of the participants agree that having dedicated testers in Agile teams brings significant benefits. Those benefits can be listed as opportunity for early participation of the testers which is very important to the success of the project and increased release quality. On the other hand, 20% of participants have distributed testers in Agile projects, 13% of respondents indicates that they have hybrid test team and 13% of organizations have outsourced test teams. Experience, level of domain knowledge, communication need, tools and process are some of the factors affect the type of test organizations.

FUTURE PREDICTIONS

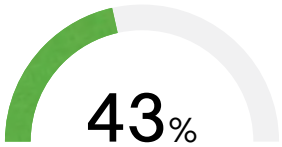
Especially in last few years, Agile methodology is adopted by many organizations in software development and one of the key aspects in this approach is to be aware of the interaction between various individuals in project team. In parallel with this trend, organizations aim to manage and balance growing Agile Testing with high productivity. Although there are many factors affect the type of test organization due to organizations' and project domain's, it would be fair to assume that dedicated testers will continue to take significant roles in Agile teams. In the future, we may expect the ratio of hybrid and outsource test teams to increase, because with Agile development, the effect of time to market competition considering quality will be felt more and organizations will need Agile Test teams with domain knowledge base on projects. In addition, growing number of organizations work with geographically distributed teams and increased number of distributed testers collaborate on an Agile project. Thus it is predictable to see even distribution in ratios in near future.

5 WHAT ARE YOUR TOP TESTING CHALLENGES IN YOUR AGILE PROJECTS?

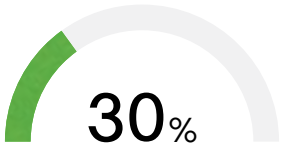
** multiple selection was allowed*



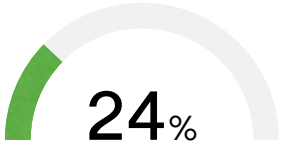
45% *Documentation*



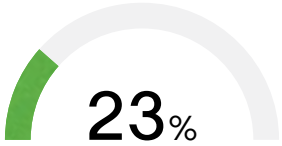
43% *Test Automation*



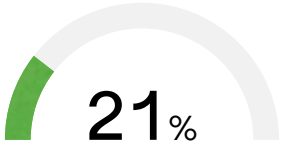
30% *Test Effort Estimation*



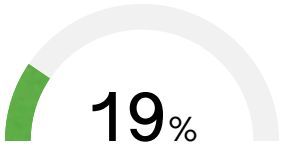
24% *Test Reporting*



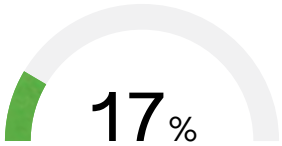
23% *Quality Ownership*



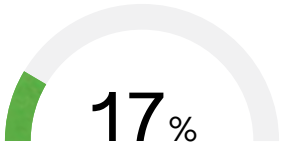
21% *Risk Awareness*



19% *Exit / Entry Criteria*

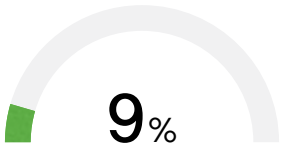


17% *Team Dynamics (Decision Making)*

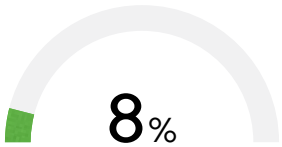


17% *Traceability*

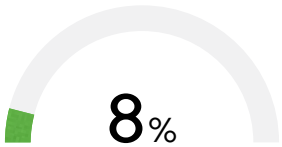
15% *Cross Functional Needs*



9% *Legacy Defects*



8% *Decision Making*



8% *Regulatory / Compliance Issues*

ANALYSIS OF THE CURRENT SITUATION

Although Agile manifesto values "working software" more than "comprehensive documentation", Agile teams still suffer most from documentation needs. This is due to the fact that old habits of project management still exist in the organisations. In addition to that, the documentation rules and needs set by the regulatory bodies may increase the documentation workload and challenge on Agile teams.

Survey indicates that documentation challenge is followed by test automation challenge. The continuous evolving nature of software and thus its requirements during Agile projects make test automation hard to implement. "Immature requirements are threats to test automation causing loss of work due to revised test scripts.

The difficulties in test automation and continuous changing requirements make test effort estimation hard to predict. Because of that, this challenge appears to be the third most important challenge in the survey.

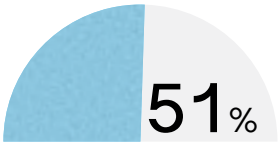
FUTURE PREDICTIONS

As the collaboration among Agile team members and between customers and agile teams increase, and Agile teams get rid of their old project management habits, we expect documentation will be a less important issue in the Agile teams' agenda.

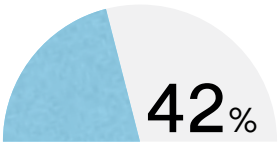
With the vastly penetration of new software development mindsets like continuous integration, continuous delivery, DevOps, and continuous testing, the need and the challenge for test automation will increase exponentially. The more involvement of all Agile team members in test automation and focusing test automation efforts mostly on regression tests may ease the challenge of test automation. This approach may also ease the difficulties in test effort estimation.

6 WHICH OF THE FOLLOWING **BENEFITS** ARE THE MOST VALUABLE ONES IN YOUR AGILE TESTING PROJECTS?

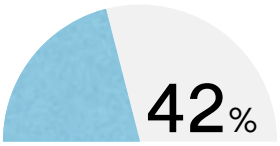
** multiple selection was allowed*



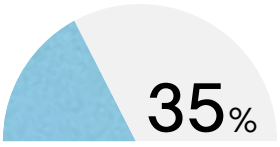
Total Quality Management



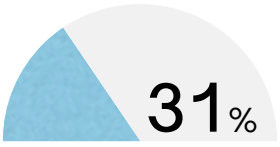
Collaboration



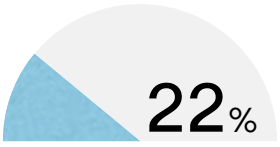
Test Effectiveness



Release Management



Test Effort Efficiency



Configuration Management

ANALYSIS OF THE CURRENT SITUATION

"Total Quality Management" (TQM) and "Collaboration" are the most chosen responses in this question. The main idea of TQM is that every unit and individual within the organization is responsible for the quality. Also, TQM drives continuous improvement in the processes. It is obvious that both of these principles are substantial element of Agile Testing. In addition, this result shows us that the most valuable item in an Agile project is the shared responsibility and the effective collaboration that these are definitely essential elements for the success of the projects.

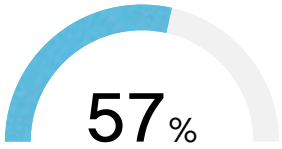
Other important comment from answers is that the test effectiveness and successful release management activities are necessary for the dynamic nature of Agile Test environment. Fast and adaptive release management is the key part of Agile Testing.

FUTURE PREDICTIONS

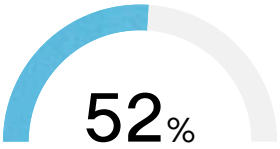
In the future, we are likely to see similar trends. Independently from time, integrated quality perspective and collaboration will be essential for the all successful Agile Test methodologies. Future release management tools will work more efficiently in the Agile projects and these tools will be well-matched nature for Agile Testing. Using new Agile Testing practices will increase effectiveness and this can effectively decrease the cost of quality.

WHICH OF THE FOLLOWING **SKILLS** ARE EXPECTED FROM AN AGILE TESTER IN YOUR ORGANIZATION?

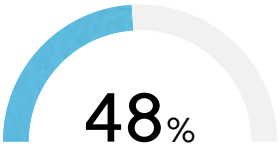
** multiple selection was allowed*



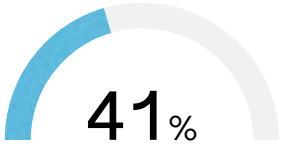
57%
Soft Skills (Negotiation, teamwork, etc.)



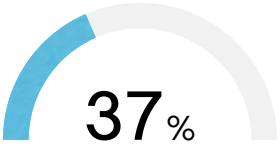
52%
Business Analysis Skills



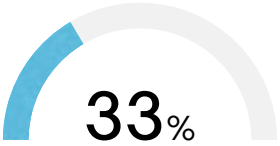
48%
SDLC Knowledge



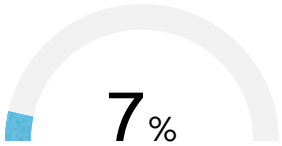
41%
Database Skills



37%
Continuous Integration Skills



33%
Coding Skills



7%
Cloud Services Skills

ANALYSIS OF THE CURRENT SITUATION

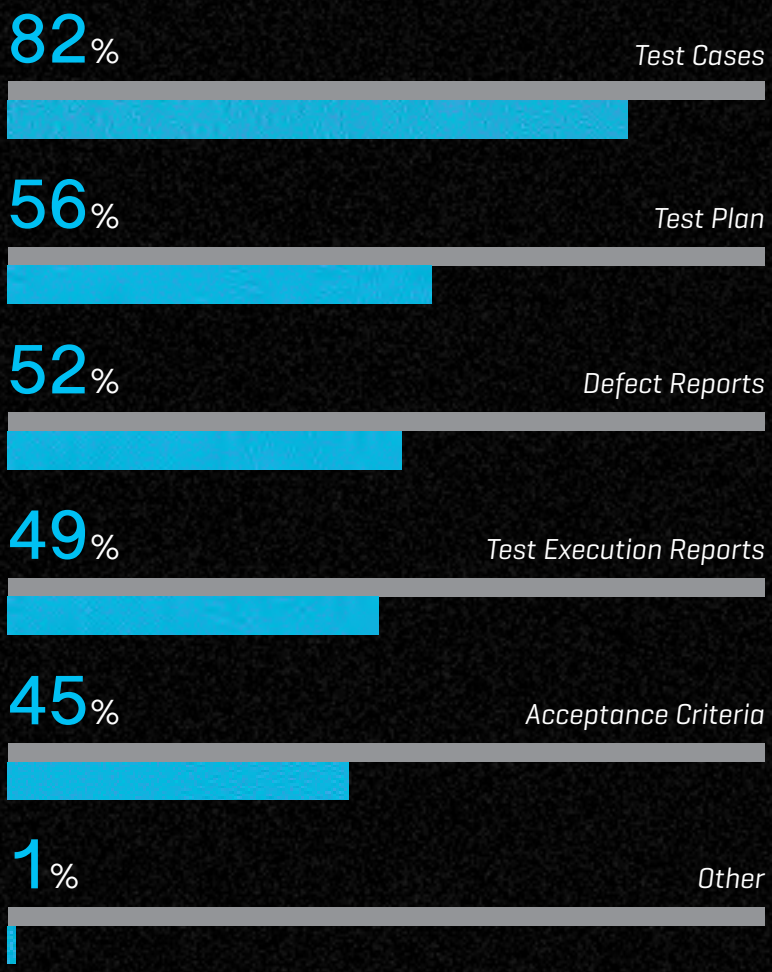
Providing continuous feedback, enabling face to face communication, having courage are the critical principles of an Agile Tester. These principles need excellent Soft Skills and the survey results also supports their importance. In addition to Soft Skills, Business Analysis Skills help the testers to elaborate the systems and business flows in depth. This enhances the early testing process, awareness of the risks and impact analysis. Furthermore, SDLC Knowledge, Database, Continuous Integration, Coding and Cloud Services Skills are the other critical skills that the organizations expect from an Agile Tester.

FUTURE PREDICTIONS

An "Agile Testing Mindset" is customer-focused, results-oriented, craftsman-like, collaborative, creative, eager to learn, and passionate about delivering business value in a timely manner. In order to have this mindset, Agile Testers must have strong Soft Skills that help them in each process of SDLC. Business Analysis, SDLC knowledge, and Database Skills will always be expected as core skills of an Agile Tester. On the other side, increased test automation demand will be required technical and coding skills. In short period of time, many companies will shift to DevOps mindset and it will force Agile Testers to enhance their Continuous Integration-Delivery and Cloud Services Skills.

8 WHAT KIND OF **DOCUMENTATION** DO YOU USE IN YOUR AGILE TESTING PROJECTS?

** multiple selection was allowed*



ANALYSIS OF THE CURRENT SITUATION

Most of the survey participants think that test cases are the most valuable artifact of the testing process to be documented. This is mostly due to the regression testing needs in Agile projects.

Following test case documentation, survey participants indicate the need for test plans which are indispensable work products especially for regulated industries such as banking and telecom.

The third item in the list is defect reporting and the fourth is test execution report. It seems that test execution reports losing their importance in Agile projects. If we analyse the responses from another point of view, 51% of the survey participants don't prefer to document test execution. Agile teams' being mostly in the same location and their close collaboration make test execution reports less important.

Acceptance criteria appears to be the least important item to be documented in Agile teams' agenda according to the survey.

FUTURE PREDICTIONS

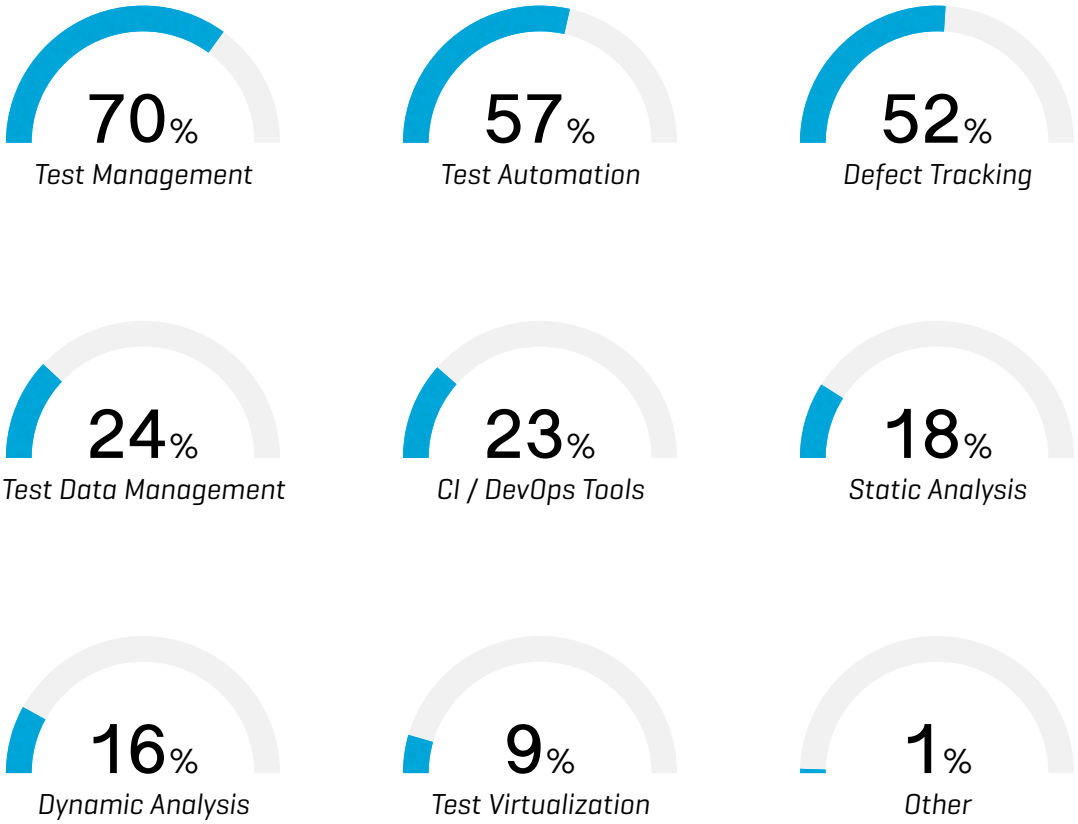
With the better understanding of Agile practices, we expect to see an increase in the documentation of acceptance criteria. Acceptance criteria corresponds to the functional and non-functional requirements in general business analysis terminology and its well documentation make user requirements complete. Otherwise, the incompleteness of user requirements will cause quality problems and customer dissatisfaction, and confusion among Agile team members.

The more penetration of Test-Driven Development (TDD) and Behaviour-Driven Development (BDD) practices into software development in future will reduce the need for test case documentation.

Also the expectation of increased collaboration among Agile team members by breaking their old project management habits will cause a decrease in test plan, defect report, and test execution report documentation.

WHAT KIND OF **TOOLS** DO YOU USE IN YOUR AGILE TESTING PROJECTS?

** multiple selection was allowed*



ANALYSIS OF THE CURRENT SITUATION

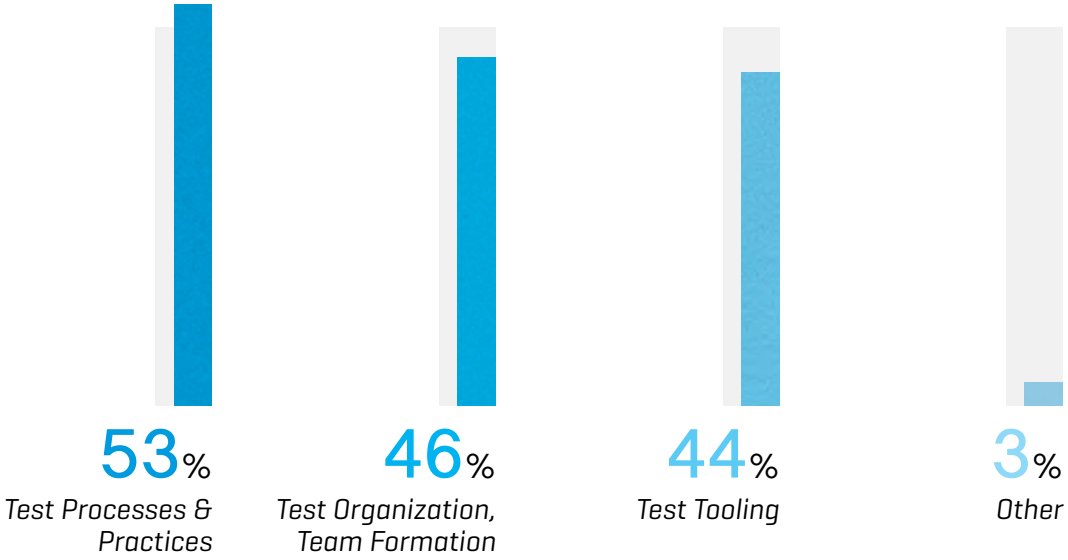
Usage of Test Management tools increasing is expected for Agile environments as they are used widely for most status updates and swift communication within teams. Most of the test documentation in the waterfall projects are replaced with the commonly used tools. Also it appears that Test Automation is increasing, which is a good representation of overall processes' becoming more Agile.

FUTURE PREDICTIONS

It can be assumed that in the future Test Automation as well as other processes being automated can take the first place on this list. Also CI / Devops Tools have a major role in Agile projects and we may assume they will become more commonly used.

10 WHICH OF THE FOLLOWING AREAS DOES YOUR ORGANIZATION PLAN TO **INVEST** MORE NEXT YEAR?

** multiple selection was allowed*



ANALYSIS OF THE CURRENT SITUATION

According to the survey, majority of companies consider to invest on Test Processes and Organizations prior to investing on Test Tools.

Managers are aware of the fact that tools are wizards, but not magicians. They have limits. Tools can only help test teams do their work in a more convenient way if the processes and organizational competencies are at a certain maturity level. If the process and organizational maturity is at a good level, automation makes it better; otherwise, automation may even make it worse. Therefore, managers should first focus on improving their team's requirements and test management skills and then give the start for the automation initiative.

FUTURE PREDICTIONS

The number of companies who want to establish testing centers of excellence increases in a fast pace. This brings the necessity to assess and improve organizational and process maturity according to global best practices. Test teams that create their investment roadmaps in a more structured way in alignment to global standards will achieve a higher ROI (return on investment). Based on this, the current high popularity of TMMI (the Test Maturity Model Integration) assessments is expected to increase even more.

CONTRIBUTORS

Ayten Özkul
Agito

Ayten Uzun
Akbank

Barış Sarıalioğlu
Keytorc

Berk Dülger
Keytorc

Besim Kosova
Keytorc

Canberk Akduygu
Keytorc

Cenk Çalışır
Anadolu Sigorta

Duygu Onaral

Emine Çelik
Turkcell Global Bilgi

Emrah Yayıcı
BA-Works

Fatma Molu
Kuveyt Türk

Filiz Özcan
Savronik

Fulya Şengil
Monitise

Gülşah Sezek
Agito

Haluk Şahin
Siemens

Koray Yitmen
TTB (Chair)

Merve İçöz
TTB

Onur Başkırt
Kariyer.net

Pınar Cinali
BA-Works

Şenay Varnalı
Türkiye Finans

Taner Ergin
Avivasa

Tolga Mırmırık
WeBeYou

Uğur Erol
Keytorc

Ünzile Algül
Data Process

ABOUT

Turkish Testing Board (TTB) is the regional body representing and supporting software testing professionals in Turkey. The TTB was constituted in Istanbul in September 2006 as a non-profit organization and a member of the International Software Testing Qualifications Board (ISTQB).

TTB is responsible for certification of testing professionals to the standards and syllabi laid down by the ISTQB. TTB also acts to generate public awareness of the economic and risk mitigation benefits that professional software testing practice offers.

www.**turkishtestingboard**.org

TestIstanbul is the largest conference in South East Europe and Middle East on software testing. TestIstanbul introduces the region not only to the advancements in software testing but also to the advancements in other streams of SDLC like business analysis, design, development and usability. With its almost 400 participants from all over the world every year, TestIstanbul creates a healthy discussion and networking platform for IT professionals and organizations.

www.**testistanbul**.org

ISTQB is a global, non-profit organization responsible for enabling test professionals, through globally accepted software testing certification standards to support their career development. As of December 2016, ISTQB has administered over 700,000 exams and issued more than 500,000 certifications in over 117 countries world-wide.

www.**istqb**.org

TURKEY SOFTWARE QUALITY REPORT

Agile Testing 2017-18

TURKEY SOFTWARE QUALITY REPORT

Agile Testing 2017-18

ISTQB International Software Testing Qualifications Board

www.**turkishtestingboard**.org | info**@**turkishtestingboard.org
Phone: +90 212 290 76 62 | **Fax:** +90 212 290 76 63

TTB Turkish Testing Board www.turkishtestingboard.org