



STATE OF TESTINGTM

REPORT 2019



Why do we want to know what other testers are doing?

You know what? That is a really good question!

We believe there is value in understanding not only how other testers are doing their work, but also why are they doing it the way they are.



When we started the State of Testing project, our goal was simpler, we wanted to capture a picture of how testers were testing. A simple snapshot, to serve as a guide or a benchmark so that we could learn where to invest more, which other techniques to learn and even get inspiration flowing in the right direction. We think we managed doing that not only to ourselves but to others as well.

As we continued with the project, we realized that we had the option of providing even more value to the community. Not only to help find the gaps we could fill out today, but to map a trend that would show where the testing world is year after year. Moreover, we could use this trajectory to speculate (or even, in less bombastic terms, think) about where is testing headed as a profession.

Looking at the data, we see an evolution taking place. Some people like to see a revolution, and this may be the case when you focus on a specific case, but when you aggregate the information from all the varied and different answers you realize that it is more of a slow but stable evolution. And in a sense, this is better, because history has shown us that were the noise and whistles of revolution usually die down once the dust settles, the quiet forces of evolution will never be stopped.

As always, we are grateful to many people who helped us work on this project. First and foremost to the over one thousand professionals who helped us by filling out the questionnaire. But no less important is the review committee who provided feedback and ideas that helped us keep this project relevant as the world continues to change around us - thanks to **Lisa Crispin, Damian Synadinos, Keizo Tatsumi, John Thomas, Anna Royzman and Huib Schoots!**

Now go ahead! Take a look at the report, understand what is going on around us, and look for ways to continue moving forward!

Joel & Lalit

About the State of Testing Survey

The State of Testing is the largest testing survey worldwide.

With about 1,000 participants from more than 80 countries, the survey aims to provide the most accurate information of the testing profession and the global testing community. Held yearly, the survey also captures current and future trends.

In collaboration with leading testing bloggers and thought leaders helping us make this survey a reality (see collaborators list at the end), this survey is all about giving you, as a tester, the ability to better understand your professional status compared to other testers and companies worldwide, and to be better prepared based on current and future trends. We are always happy to hear feedback from testers so feel free to contact us.

** As in previous years, we expect to have multiple translations of this survey as well. If you'd like to translate it to your own language, let us know.*

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“
By evaluating where
the Testing Community
stands each year we aim
at understanding where
are we headed



PERSONAL INFORMATION

Your current testing position is...

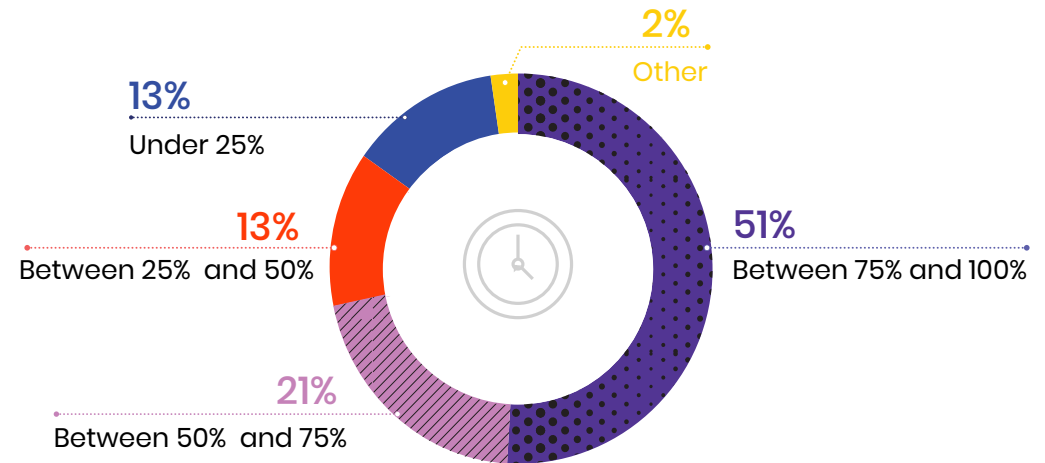
Which of the following most closely matches your job responsibility and title?

27% Test Engineers / QA Engineers	1% Test Coach
23.5% Test Leads / Managers / Directors	0.5% DevOps Engineers
20.5% Testers / Test Analysts	<0.5% Combined/Unified Engineers
7.5% Automation Testers	0.5% Performance Testers
2.5% Team Leaders	1.5% Project Managers
2% Consultants	2.5% Software Engineers
2% Software Engineers	<0.5% Combined / Unified Engineers
2% Test Architects	6.5% Other

We see stable numbers for the answers on the titles of respondents. Last year we wondered if we would see a slight increase in the percentages for Unified Engineering section, but we have not yet seen this increase, we will keep our eyes on it.

Is testing 100% of your work?

What percentage of your formal role involves performing testing activities?



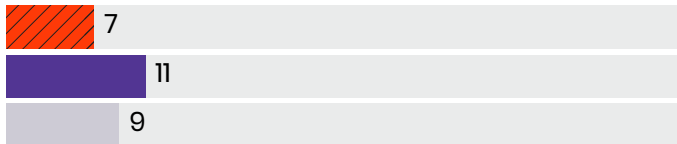
This is the second year we ask this question, and the numbers look relatively similar to last year, with a small increase in the percentage of people working less than 50% and less than 25% in testing. This came at the expense of those working between 75% and 100% in testing. This indicates that testers still need to be versatile and take up work in additional tasks and realms, contributing in all fields that add value to their respective teams.

What fields and realms, you may ask? Keep reading and you will see some of these additional jobs we are taking up on in the coming pages...

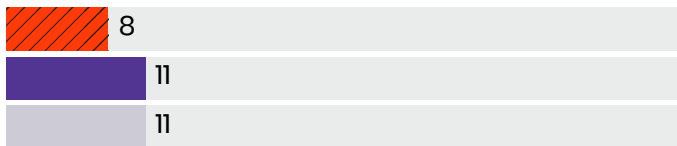
Your professional experience in the testing field is...

For how long have you been working in testing?

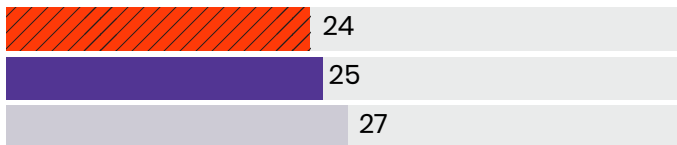
Less than 1 year



1 -2 years

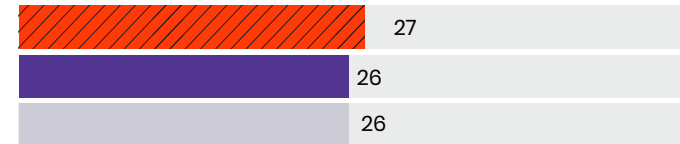


2 to 5 years

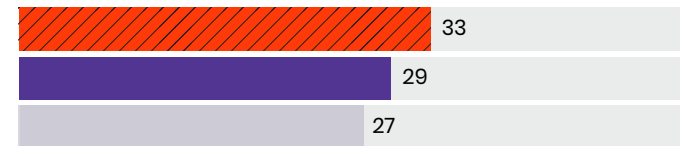


- 2019
- 2018
- 2017

5 to 10 years



10+ years

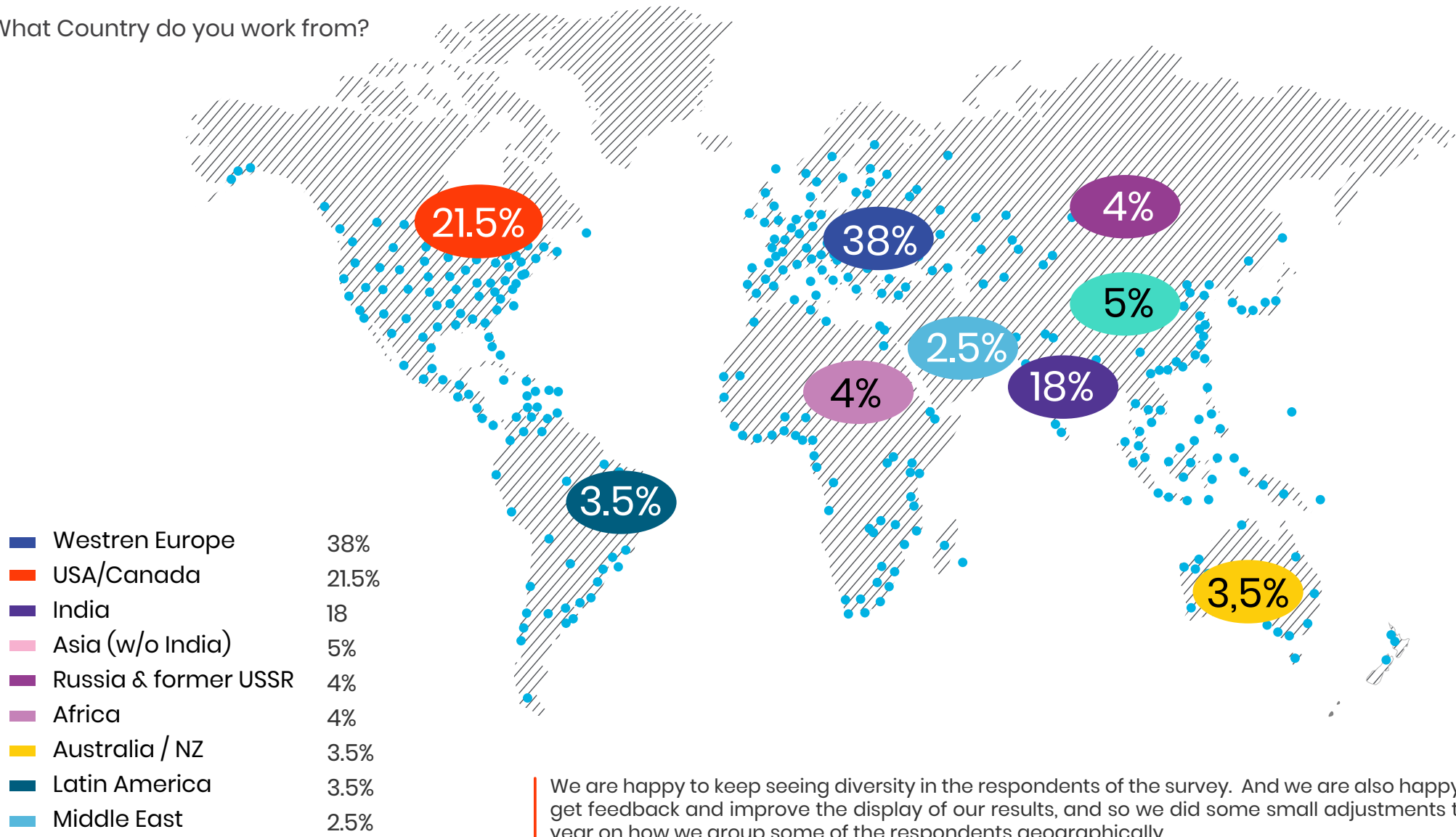


It is always good to look at data in the context of a number of years, as this allows us to find trends, and here we may be seeing a general trend where testers are staying in their field for more and more time, meaning that we are becoming Testing Professionals with years of experience doing our jobs.

On the other hand, and again, it is not wise to define a trend on one or two points of data, but we should keep our eyes open to see, if what we are seeing is a decrease in the number of new testers joining the profession. We were seeing an increase last year, but there is a sharp decrease this year on this specific statistic.

You work in...

What Country do you work from?



We are happy to keep seeing diversity in the respondents of the survey. And we are also happy to get feedback and improve the display of our results, and so we did some small adjustments this year on how we group some of the respondents geographically.

Testing Salaries Around the World

How much should you be earning based on your country and experience



	<u>>1 year</u>	<u>1-2</u>	<u>2-5</u>	<u>5-10</u>	<u>10+</u>
Africa	NA*	11K	33K	63K	94K
Asia	12K	16K	30K	36K	48K
India	11K	19K	21K	28K	45K
Latin America	5K	5K	19K	22K	23K
Middle East	NA*	NA*	NA*	23K	NA*
East Europe/ Russia	16K	20K	20K	24K	40K
Western Europe	16K	31K	43K	56K	72K
Aus / NZ	NA*	65K	70K	85K	112K
North America	51K	70K	78K	87K	115K

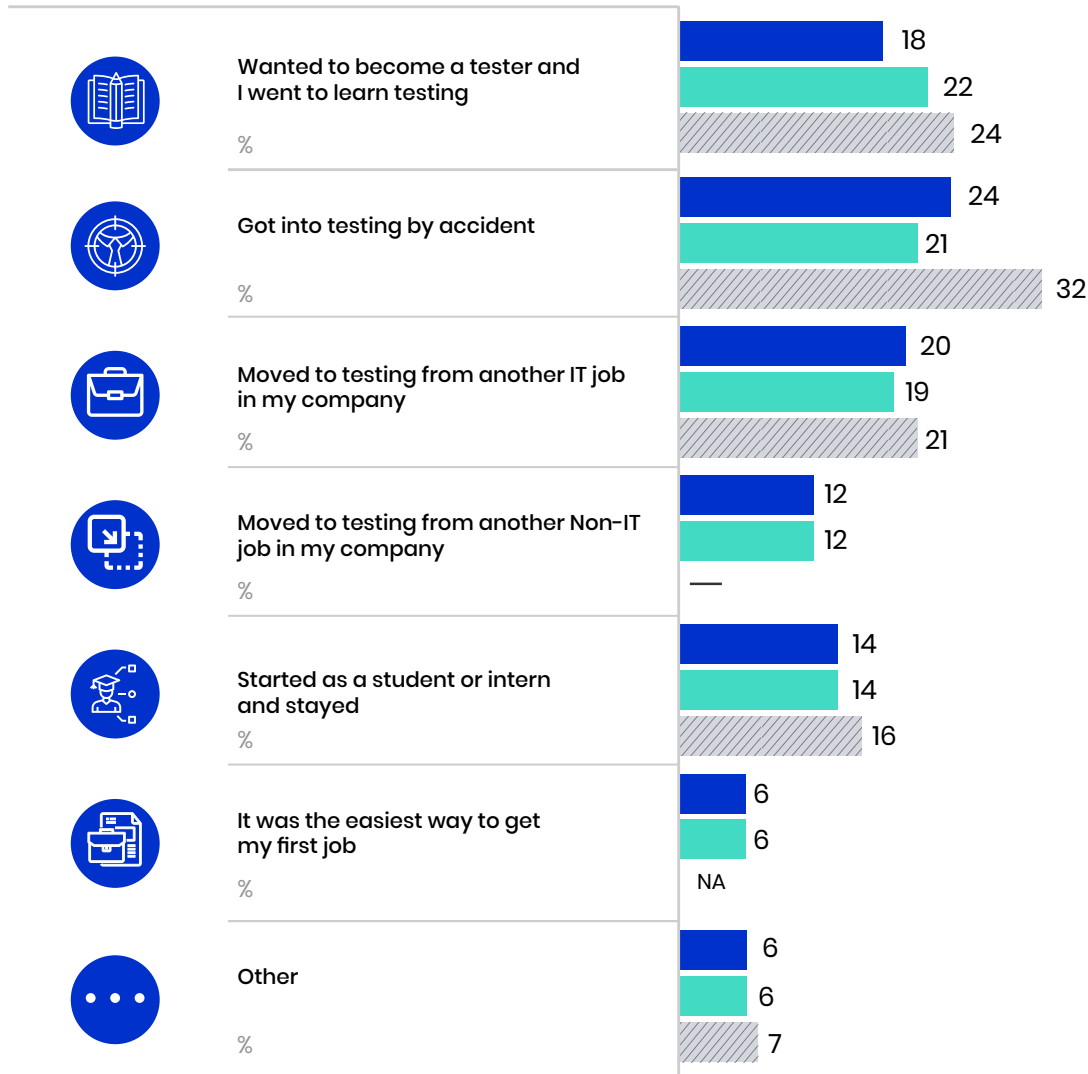
**Not enough data to calculate.
All numbers are in USD.*



EDUCATION AND TRAINING

How did you become a tester?

How did you start to do testing as part of your job?



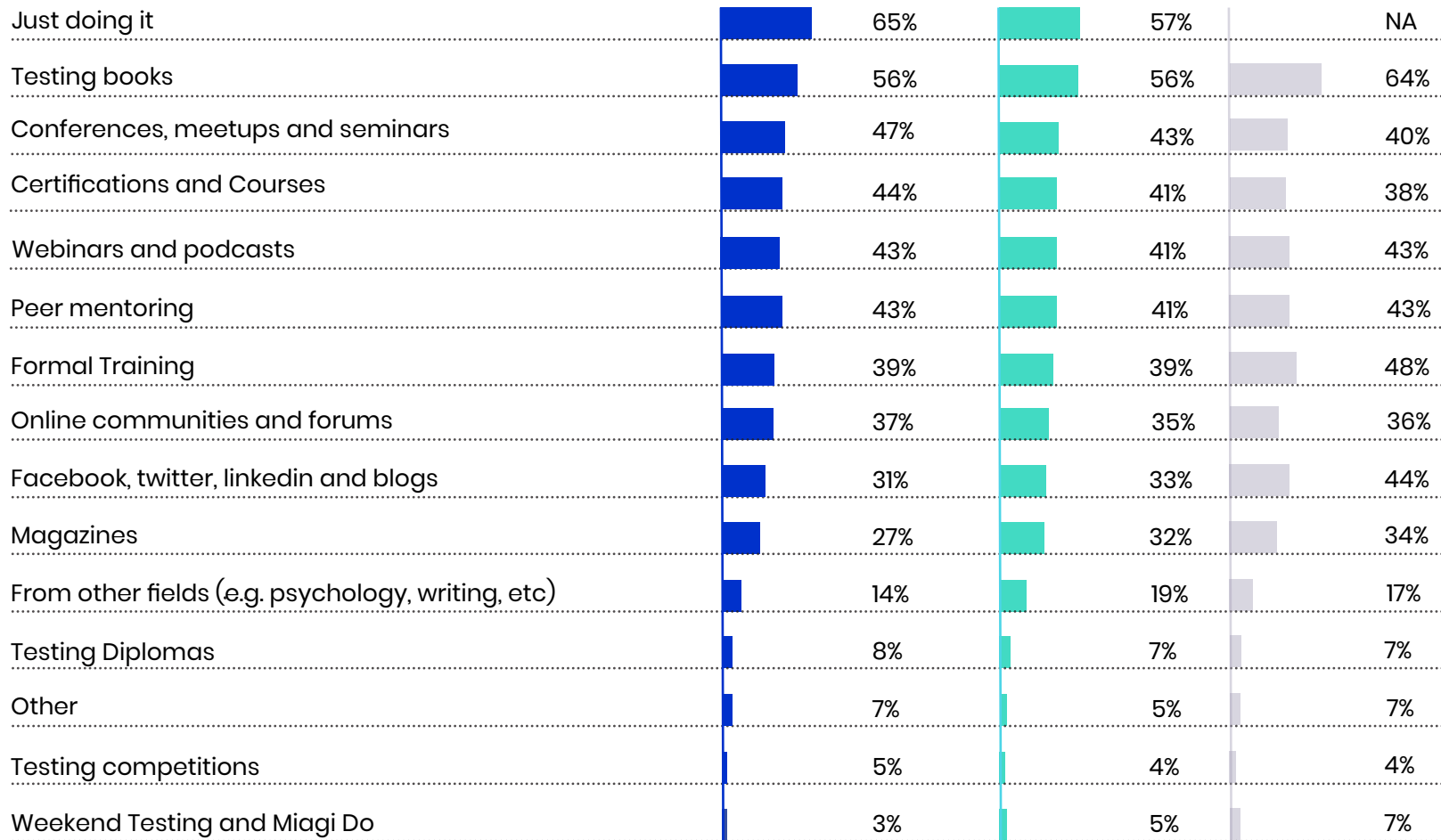
We keep seeing that people in the Industry (both in IT and outside of IT) see testing as a career path, and so the number of people who got to testing from other jobs within their companies (when you combine the 2 options) becomes the biggest gateway for them to become testers. Something to keep in mind, and to check in coming years is whether the reduction in the trend of people learning testing from the beginning will continue, and what does this mean to our profession.

Overall, we see people keep moving to testing from other jobs or positions, and this indicates that we work on an attractive career, and one that is flourishing in the eyes of the Industry.

■ 2019
■ 2018
■ 2017

How do you learn "testing" - at present and when you started your career

What methods do you use today or have used in the past to enhance your knowledge and sharpen your testing skills.



In addition to the numbers here, we always like looking at the replies we get by means of the "other" answer where people answer their free-text replies. This year we got interesting things like: Crowdsourcing, Writing and Speaking (this is our personal favorite!), Youtube videos, Udemy, and talking to other testers in my company. **Definitely Food for Thought!**

Total can surpass 100% as respondents could select more than one answer

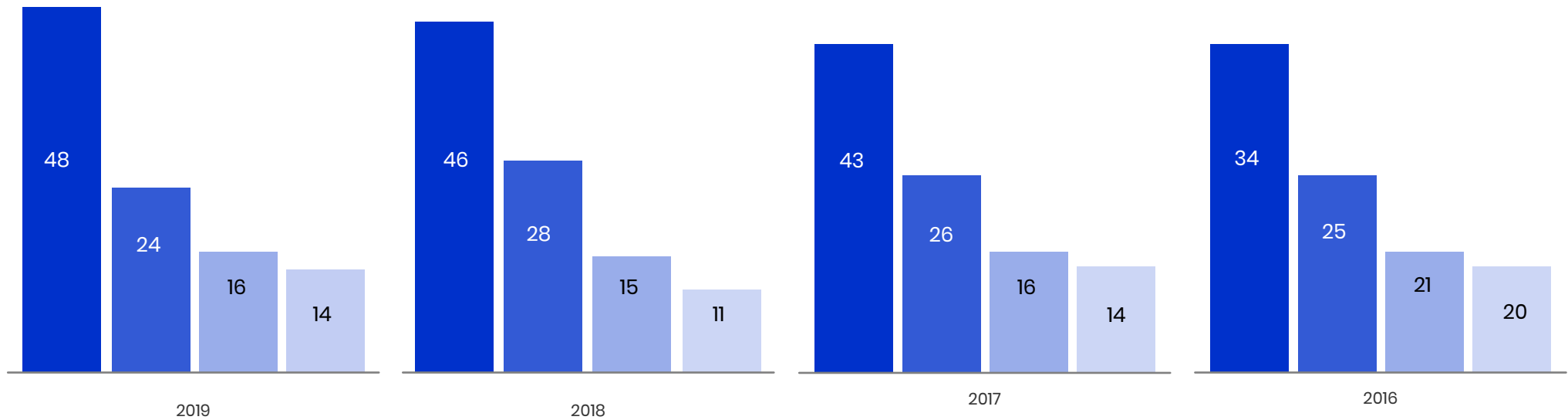
■ 2019 ■ 2018 ■ 2017

Have you attended any conferences or training sessions in the past 3 years?

What formal or informal training sessions, conferences, seminars, etc (virtual or physical) have you attended during the last 3 years?

<p>OnlineTestConf</p>	<p>TestBash</p>	<p>Agile DevOps East</p>	<p>StarWest</p>	<p>Automation Guild</p>	<p>QualityJam</p>	<p>Eurostar</p>	<p>Let's Test South Africa</p>
<p>AgileTestingDays</p>	<p>heisenbug-moscow</p>	<p>WeTest Conference</p>	<p>Romanian Testing Conference</p>	<p>JaSST</p>	<p>COMAQA</p>	<p>GTAC</p>	<p>QA or Highway Conference</p>
<p>SauceCon</p>	<p>qa: challengeaccepted</p>	<p>HUSTEF</p>	<p>Expo QA</p>	<p>Tabara de testare</p>	<p>Selenium Conference</p>	<p>ASTQB Summit</p>	<p>QA Fest</p>
<p>Testistanbul</p>	<p>Test Leadership Congress</p>	<p>Nordic Testing Days</p>	<p>copenhagen Context</p>	<p>PNSQC</p>	<p>National Software Testing Conference, (UK)</p>	<p>CAST</p>	<p>Rapid Software Testing</p>
<p>QA&Test</p>	<p>STP Conf</p>	<p>StarEast</p>	<p>TestLeadership Conference</p>	<p>StarCanada</p>			

Size of the testing teams %

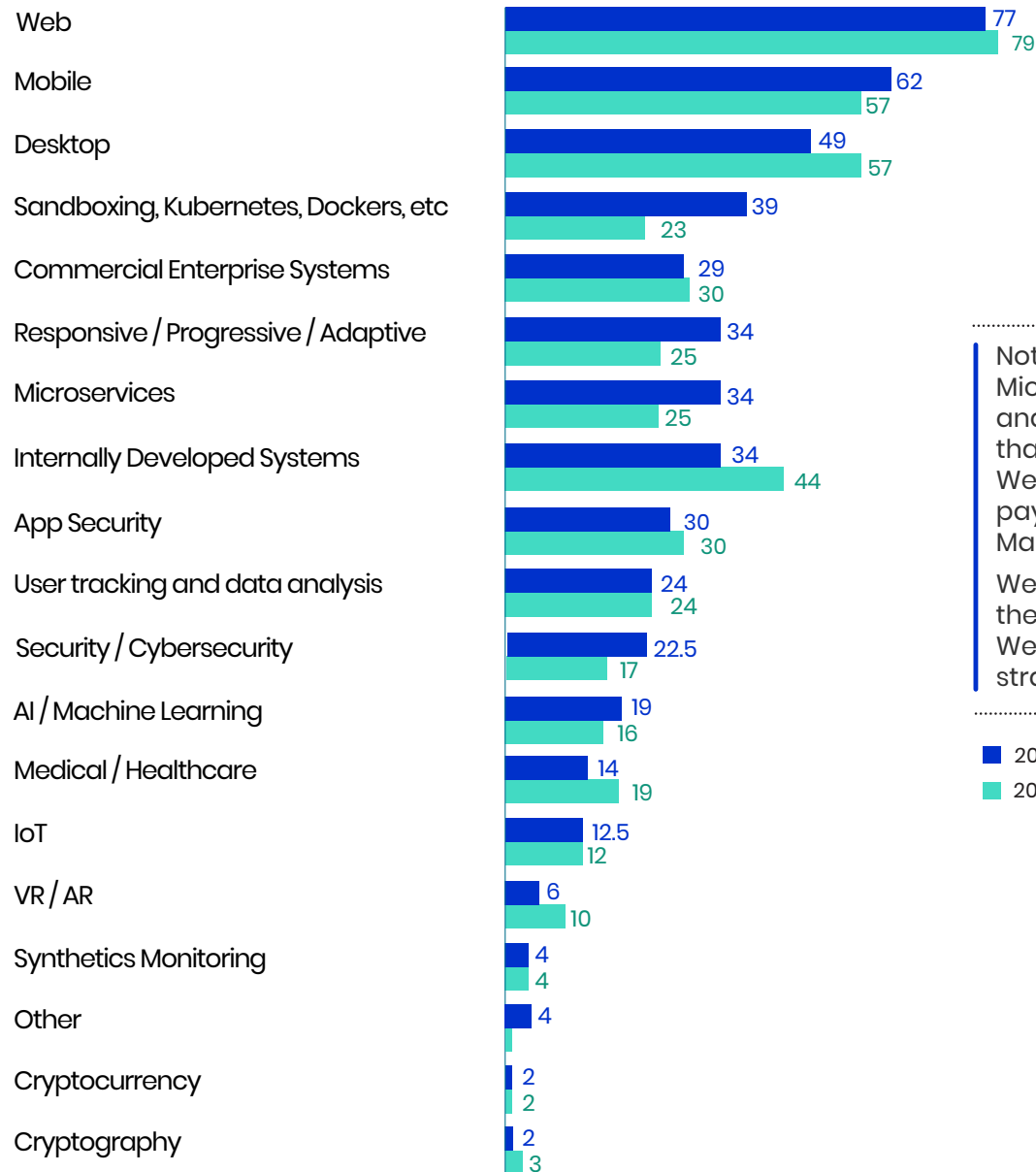


- 1-5 Testers
- 6-15 Testers
- 16-50 Testers
- 51+ Testers

There is a clear indication that testing teams are getting smaller year after year. We believe this is directly related to the adoption of agile and devops, and the fact that more testers are working either alone or in small numbers within larger cross-functional teams.

Having said that, we still see important number of large and very large testing teams, showing that smaller teams are far from being universal in our Industry.

Systems and technologies being tested %

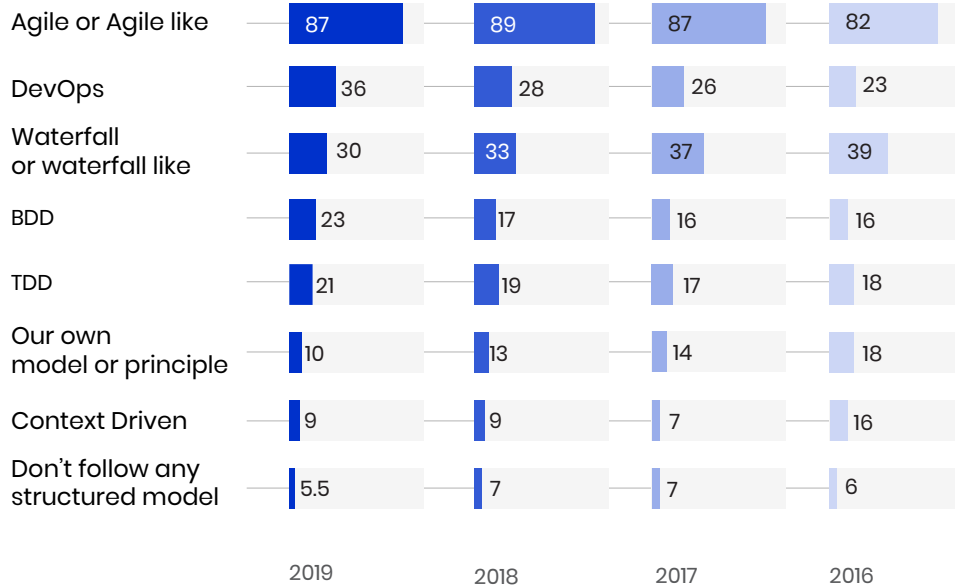


Notice the increase in areas such as: Microservices, Containers, Security and AI/Machine Learning. All these corresponding to the technologies that will continue being relevant in years to come. We also saw in the "other" category technologies such as: Geocoding, payments, CRM's, Public services, eDiscovery, Virtual Machines and more.....

We think that the new technologies and areas coming in, and the challenges they pose, create more opportunities for testers. We will need to learn these areas and come up with interesting strategies, tools, frameworks, and methods for them.

■ 2019
■ 2018

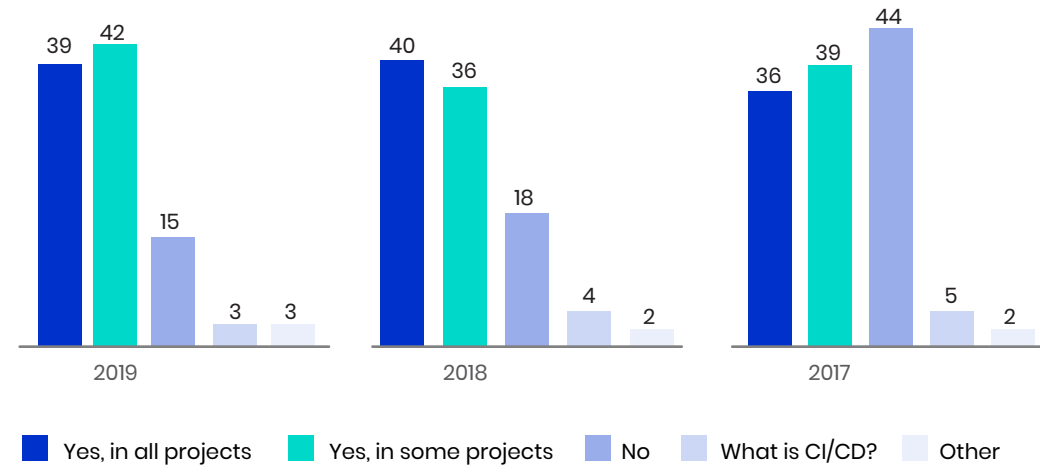
Development and testing models %



Agile keeps being the most relevant development approach, and we believe this will be the case for years to come. What is interesting and important is that for the first time we see DevOps being the second model, passing Waterfall; this due to the fact that DevOps is growing in popularity (jumped 8% this year!) while Waterfall is slowly but surely getting out of practice.

Worth also mentioning the increasing trend in both BDD and TDD.

Do you work with CI or CD (Continuous Integration or Continuous Deployment) in your organization? %



The most interesting point to notice here is how the NO went down in the last 3 years. Most organizations are using CI/CD, and we think this is these are great news for Testers. The question is how much are we (you?) involved in this process?.

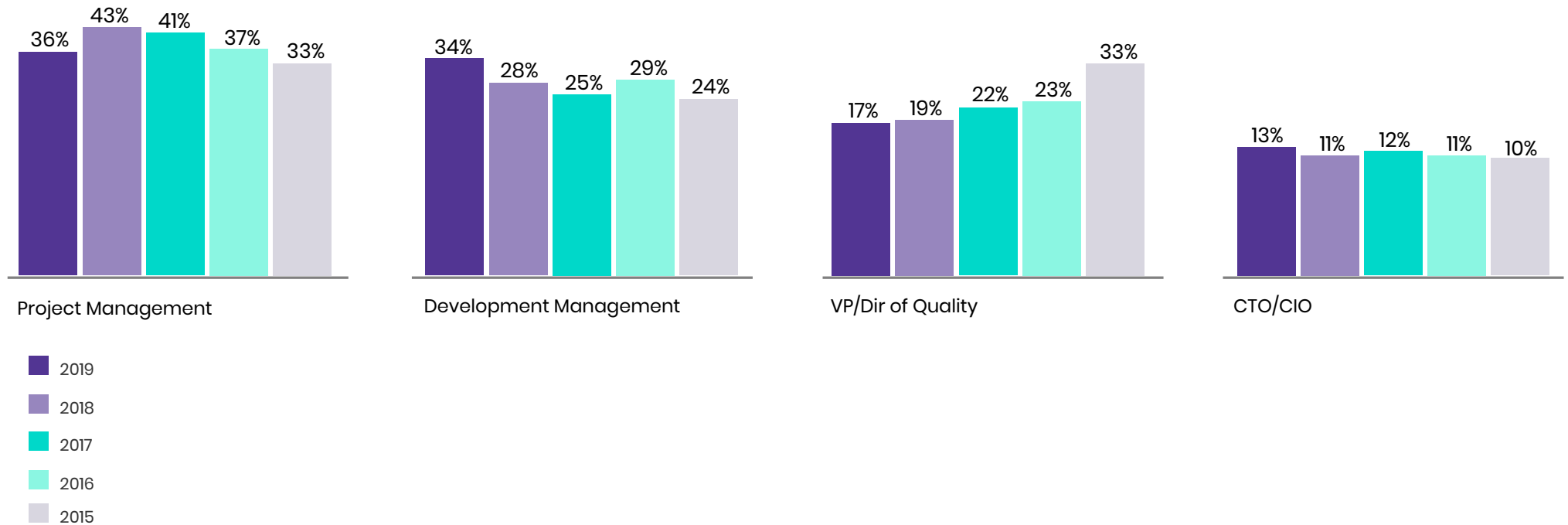
Just a friendly reminder - an integral part of CI are the tests that run within the jobs. And in case this was not trivial, you should be part of the definition and analysis of tests and results.



TESTING IN YOUR ORGANIZATION

To whom does the testing function report to in your organization?

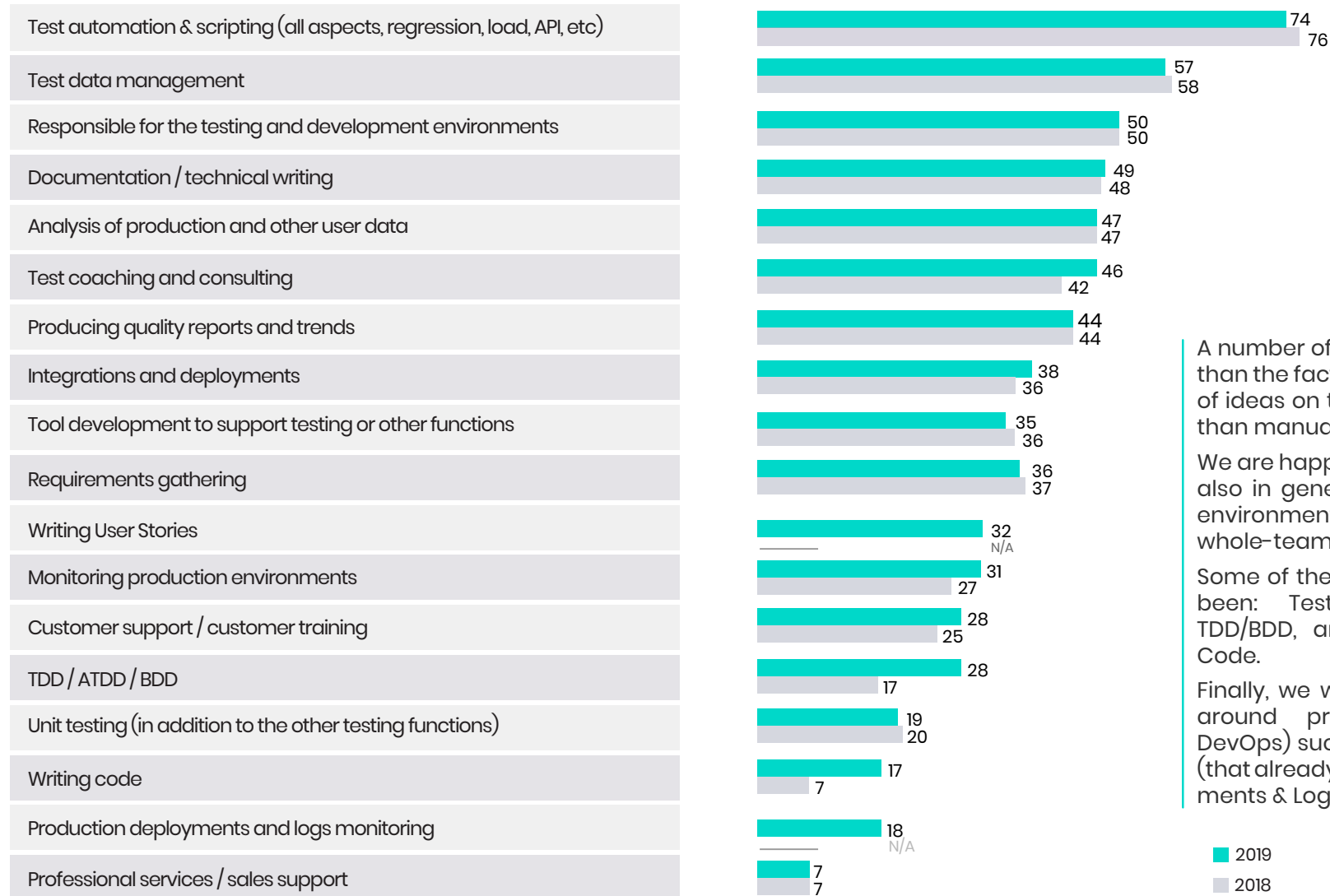
What is the title of the immediate manager accountable for the testing teams or the individual testers in your company?



Do we see here another indication that testers are working as part of smaller and more Agile teams? Maybe this is the reason why we see more and more of us reporting to Dev Managers and CTO/CIOs as less to Directors or VPs of Quality.

Tasks of the Tester in your organization %

What tasks do testers perform in your organization other than testing? (They could choose more than one)



A number of things to notice on this list, other than the fact that it should give you a number of ideas on things you should be doing other than manually testing your applications.

We are happy to see that testers are focusing also in generating test data, and preparing environments; both these tasks enable whole-team testing.

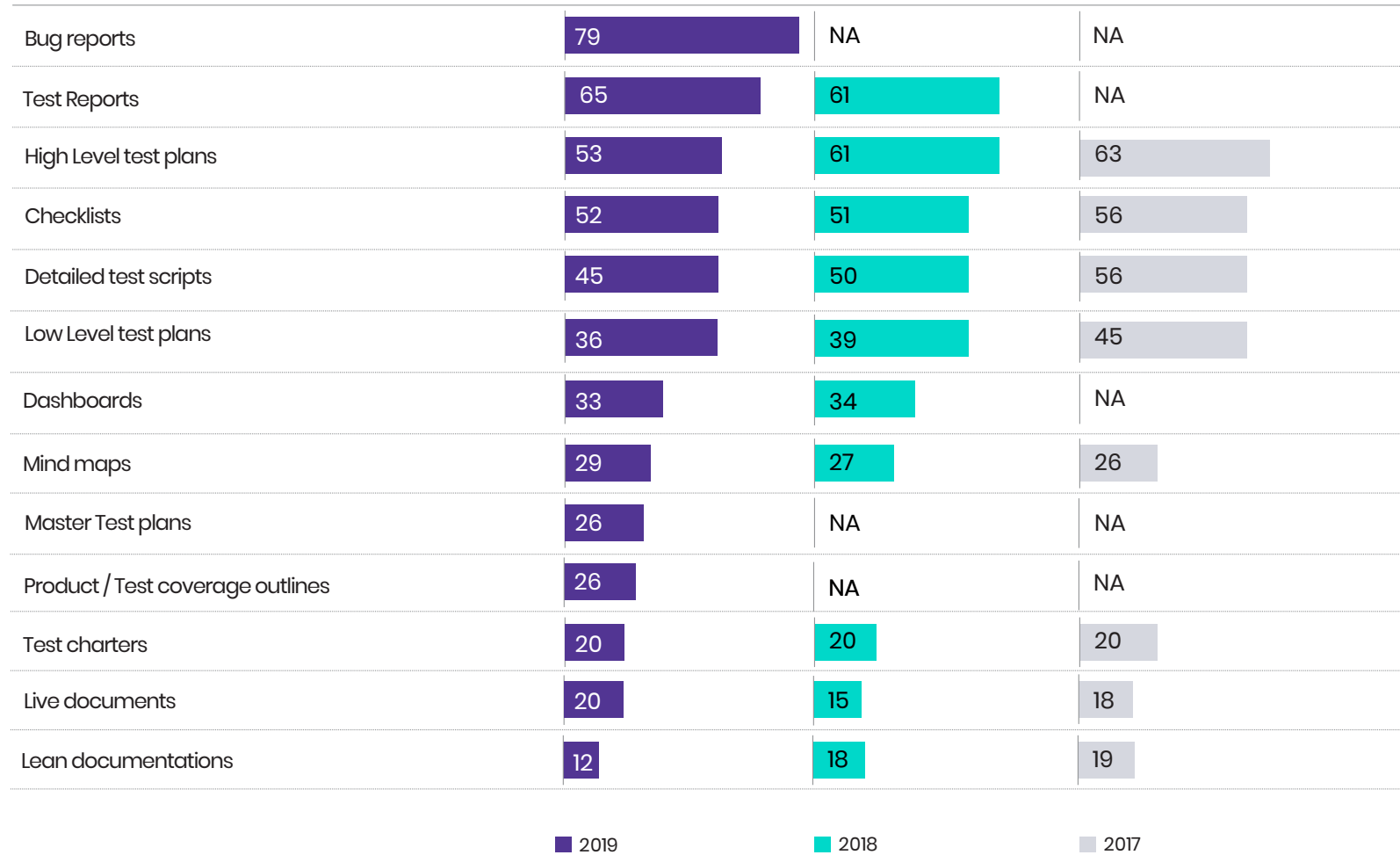
Some of the biggest “movers” this year have been: Test Coaching, Customer Support, TDD/BDD, and very interestingly - Writing Code.

Finally, we will keep a look out for the tasks around production environments (and DevOps) such as Analysis of Production data (that already has 47%) and Production Deployments & Log monitoring.

■ 2019
■ 2018

Test documentation%

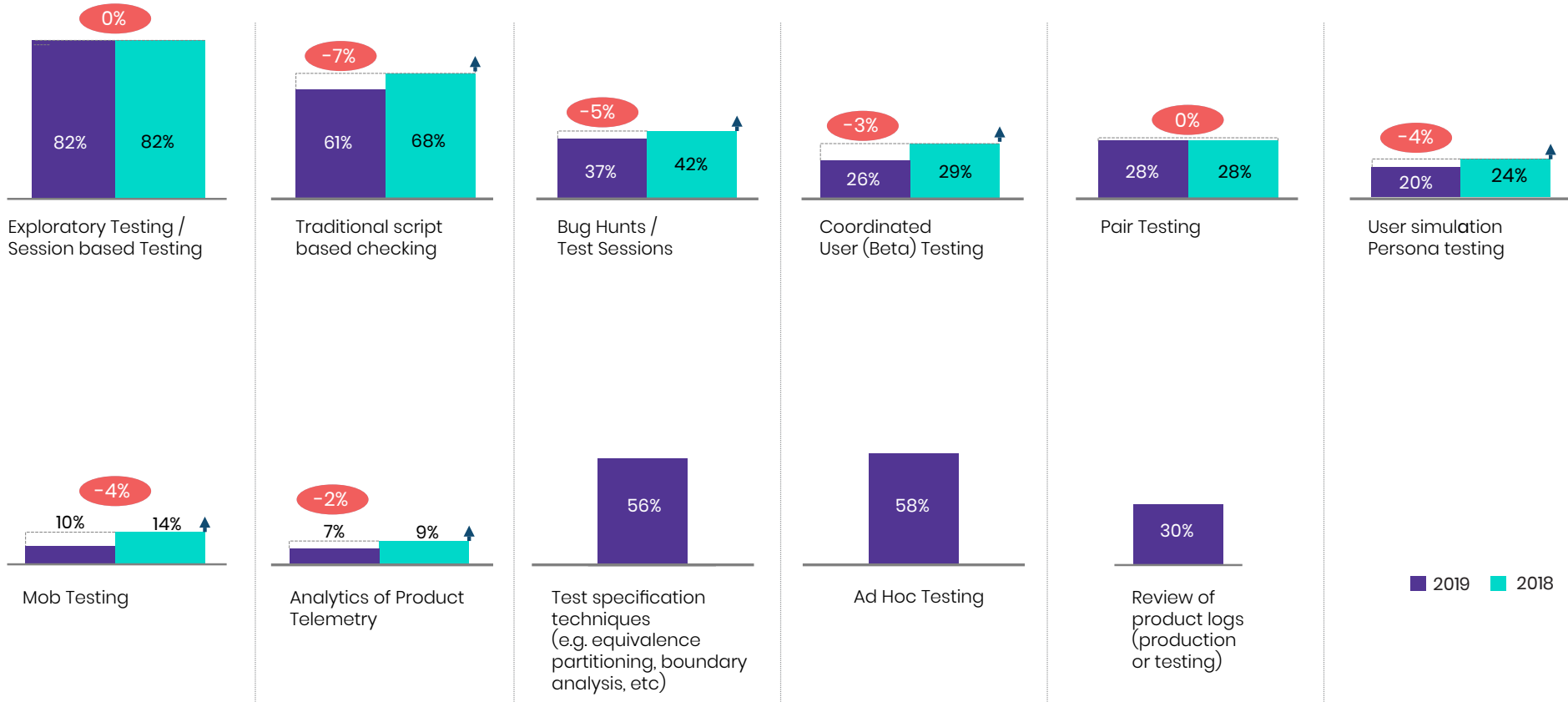
What type of test documentation do testers create in your company? (They could choose more than one)



We keep seeing less use of testing documentation overall, but we do see an increase of both testing reports and mind-maps.

Testing Techniques and Methodologies

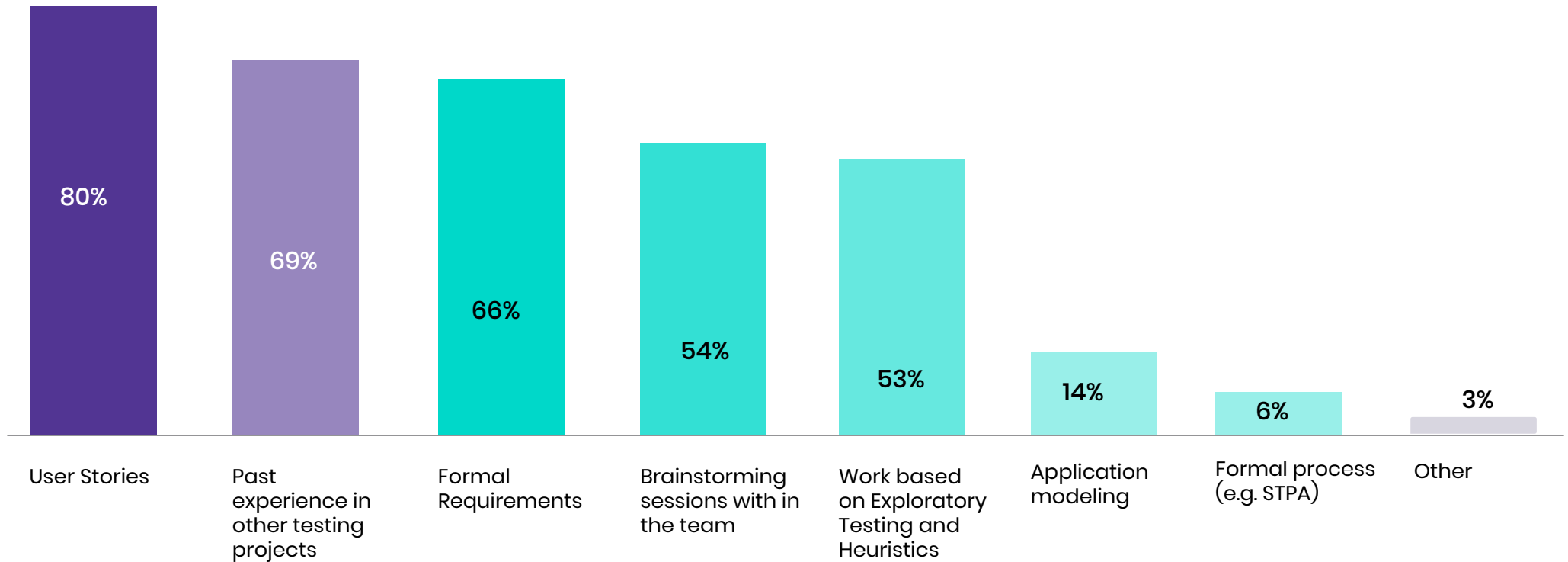
What testing approaches do you use during your testing activities? (They could choose more than one)



The numbers keep showing how testers blend different types of testing techniques as part of their work; combining more scripted techniques, together with ET, and adding Ad-Hoc testing to them. It is also interesting to see how the more structured Specification techniques still play a big role in our test planning and design.

Sources for testing information

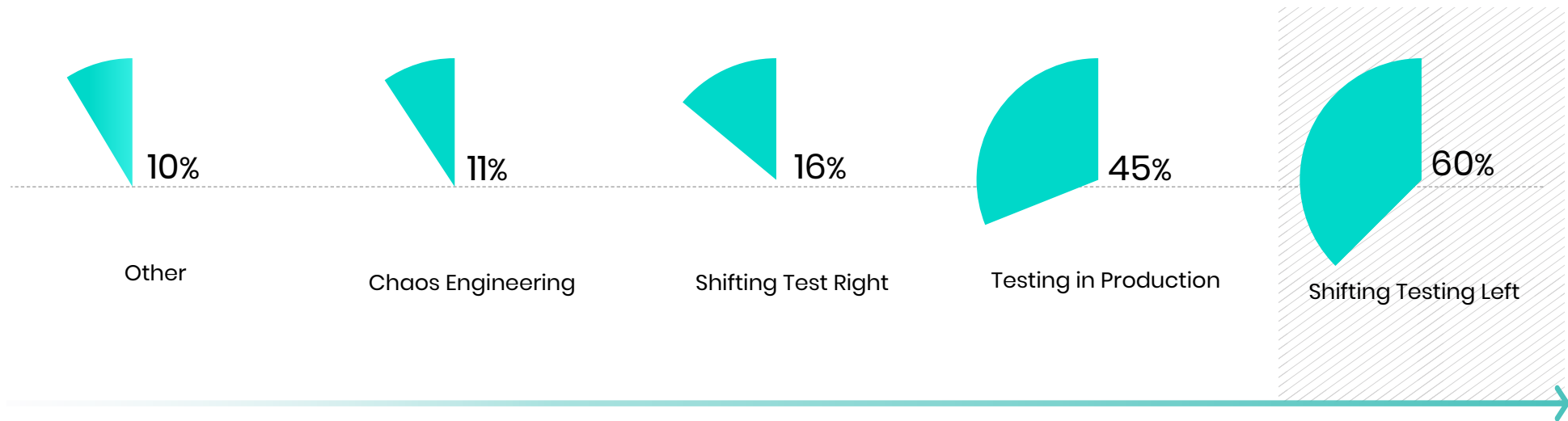
How do you know what tests you need to run or write for your testing operations?



We are not surprised that Stories and Requirements are among the top 3 ways of getting information, after all this is the “standard” way of doing it. But we also see how important past experience is, and also happy to see how working with the team is also a big source of information for testing.

Adoption of testing processes or techniques by your organization

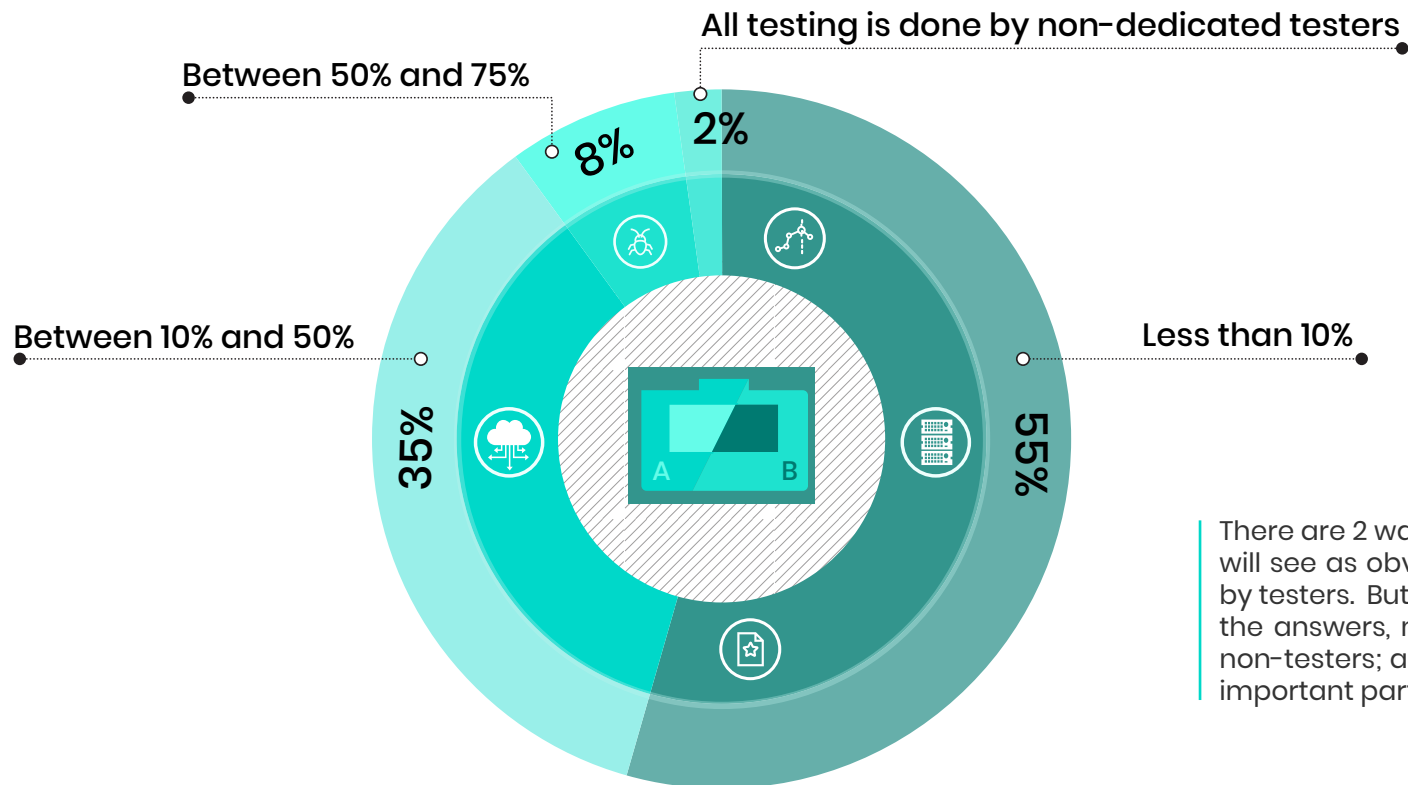
What techniques or processes are you following or implementing?



A “new entry” question this year, and it comes with some interesting insights. We see organizations shifting their testing (expanding both left and right). But the thing that caught our eye is that close to 45% of respondents are “Testing in Production” while on another questions in this survey only 36% of respondents said their teams are working DevOps. The question is then, if teams are testing in production, and if they find bugs in there, shouldn't they be working in some sort of DevOps approach to be able to correct these issues quickly and effectively...?

How much of your testing is done by non-dedicated-testers?

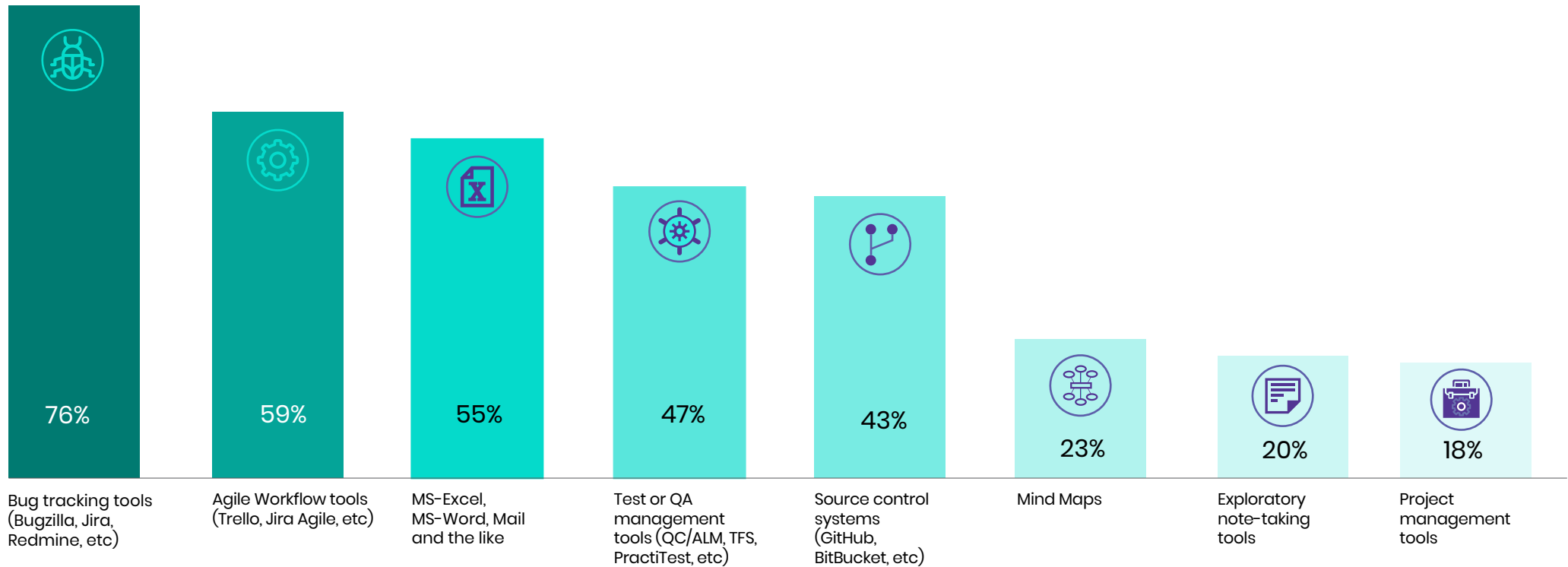
In many organizations other team members also take part in the formal testing process. (Developers, Product Owners, Support, End Users etc.)



There are 2 ways of looking at these numbers. Some people will see as obvious that the vast majority of testing is done by testers. But then again we can also see that in over 10% of the answers, most of the testing is already being done by non-testers; and almost half of them non-testers are doing important parts of testing overall.

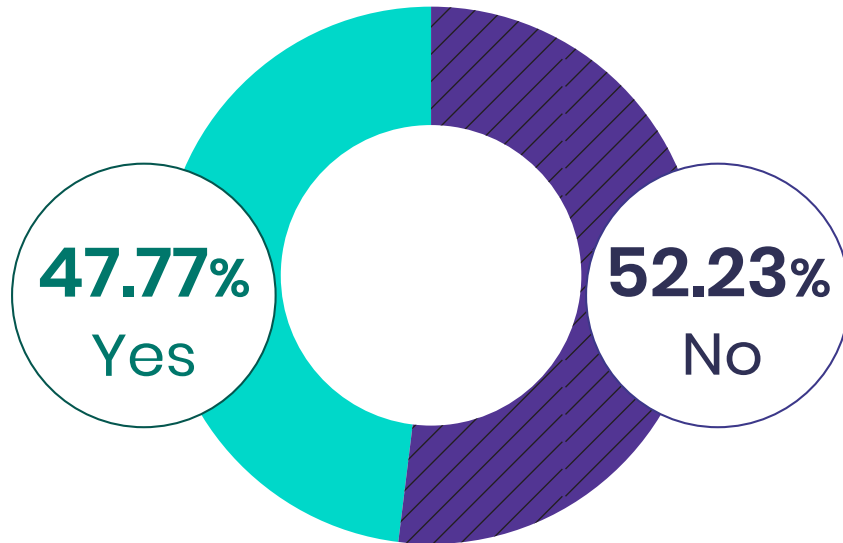
Test management tools

What tools do you use to manage your testing?



As more and more teams work Agile, then we see Agile Workflow tools taking a big part of the test management tools, but we also see how many non-testing or even development systems such as Office and Email take an important part as well.

Have you started using any new tools to support your testing, in the last year?

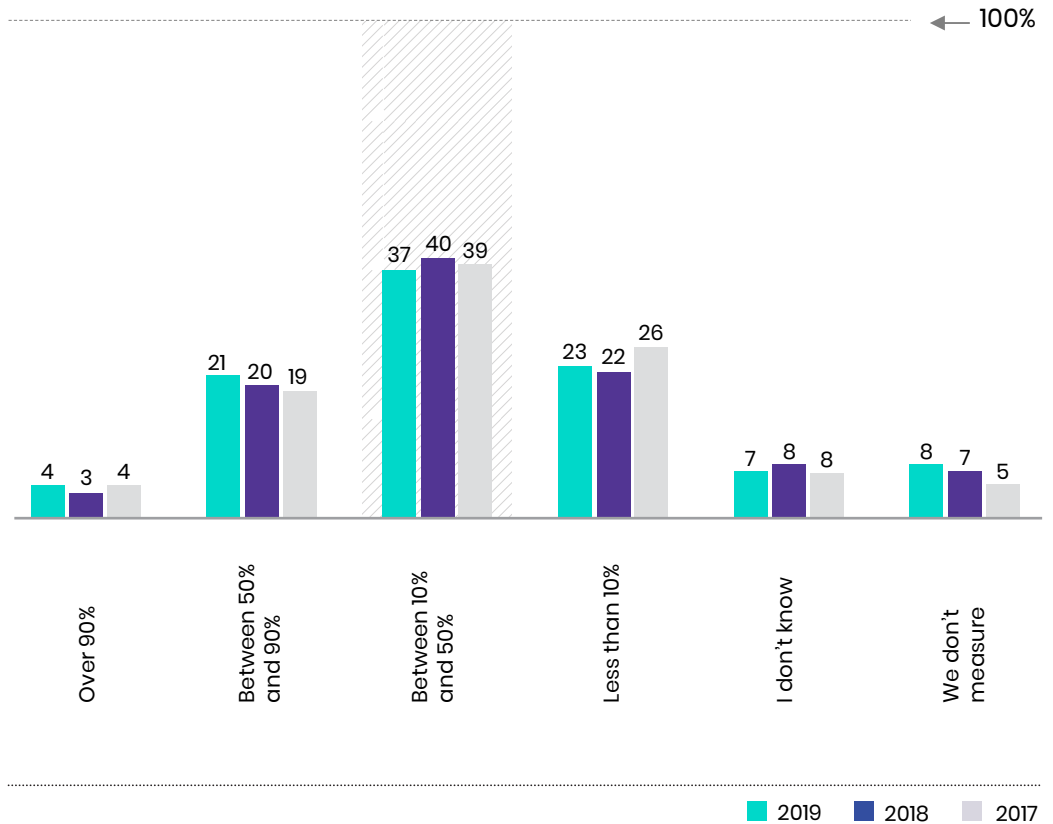


This is the third year we ask this question, last year 43% of respondents had adopted a new tool during the previous year. This number increased to nearly 48% this year.

We then asked an open question to check what tools had they started using and we got responses similar to last year, pointing at tools for:

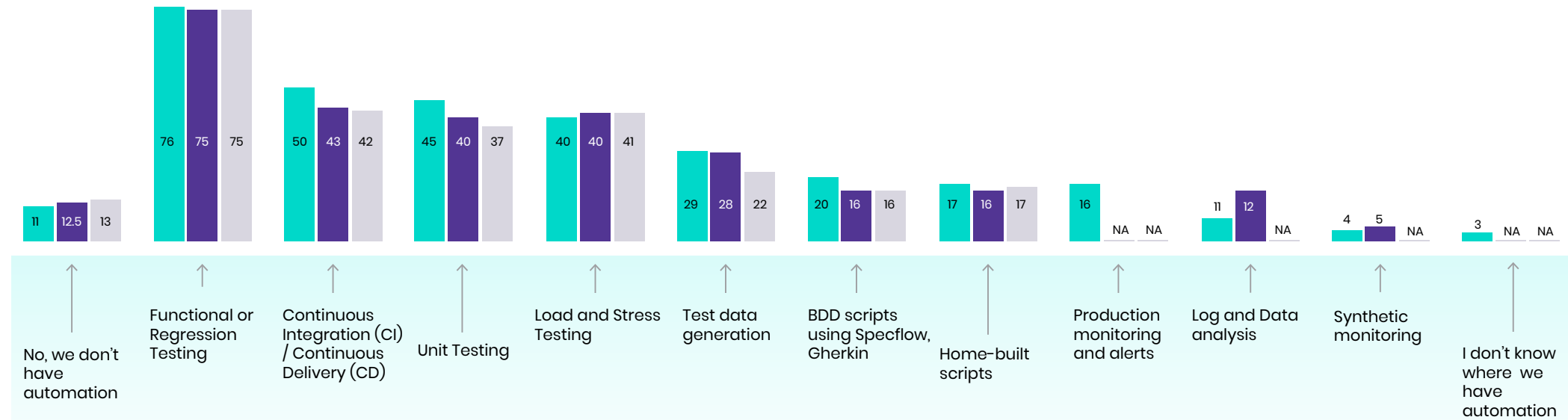
Monitoring tools, Test Management tools, API Testing, CI platforms, Mind-mapping tools, Browser plugins, Security scanning tools, and more.

Percentage of “Automation coverage” for functional test scenarios %



Scripting / Automation

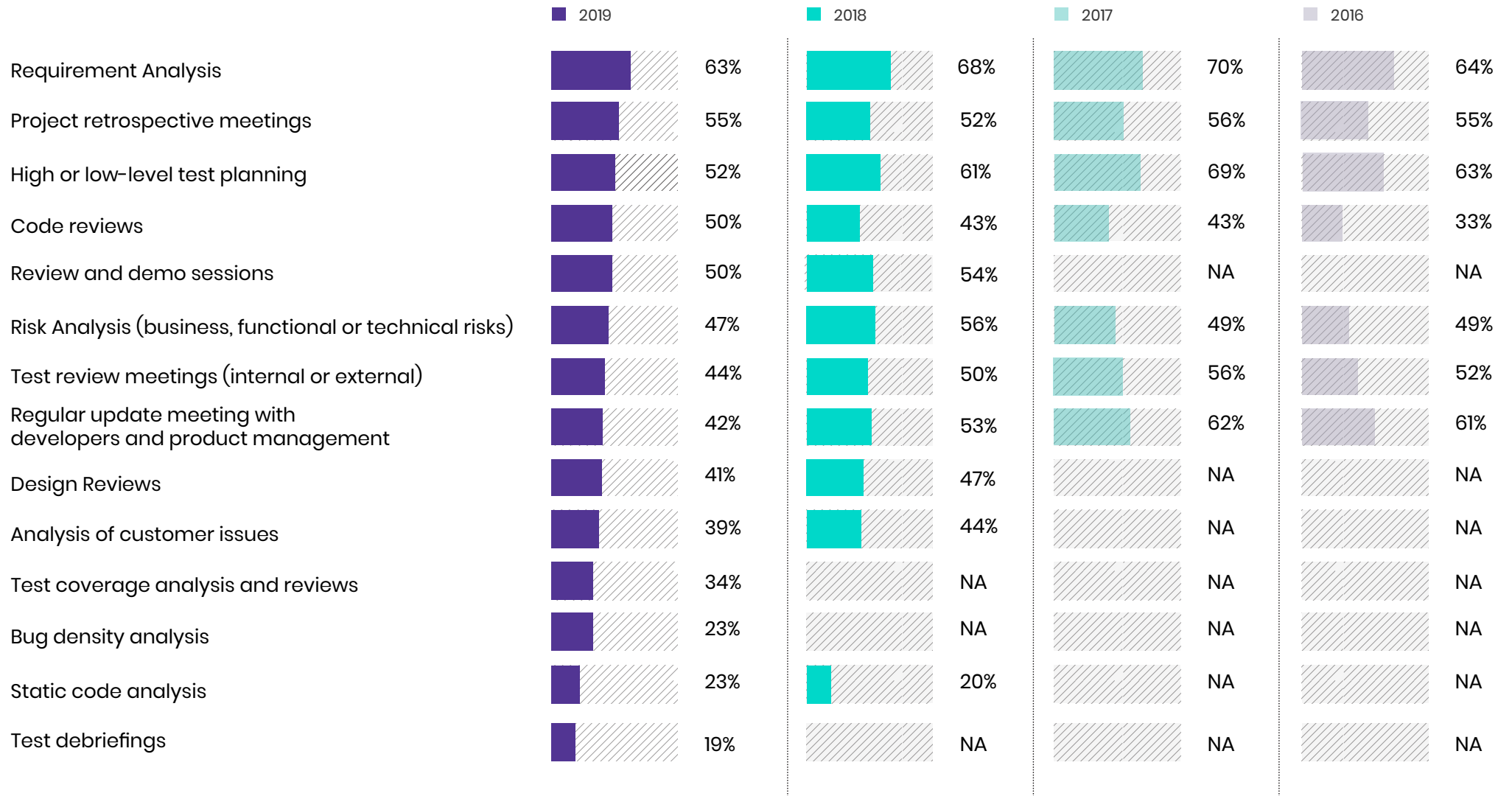
Where do you use scripting and/or test automation in your organization? %



CI and Unit Testing are rising on this year's responses, and it is good that they are doing so with some correlations between them. We also see an increase in the percentage of organizations working with BDD. As in previous years, we asked if respondents could estimate what percentage of their test cases are automated. The replies to this question also were not very different.

■ 2019 ■ 2018 ■ 2017

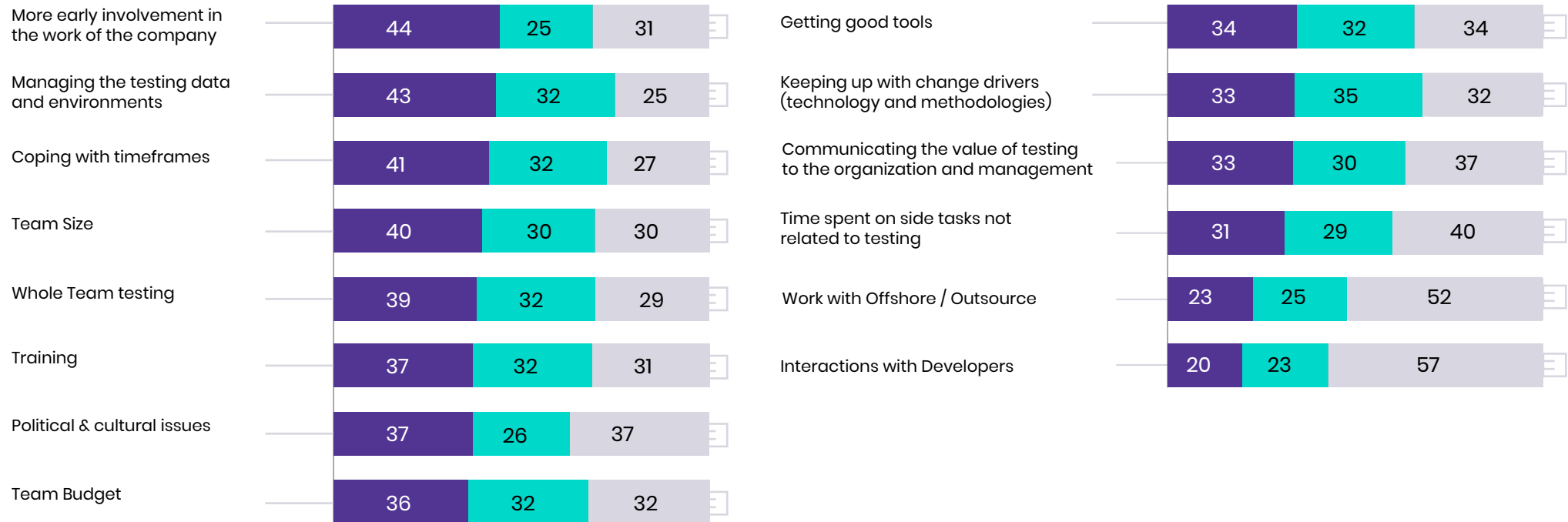
Static QA activities



Some areas are increasing, mostly around work with Developers on Code Review and Static Code Analysis. On the other hand we see slight decreases in almost all other areas. We will need to continue checking this question to get more in-depth conclusion in following years.

Testing team challenges %

How challenging are each of the following aspects of the testing team and their work in your organization



- Very Challenging
- Challenging
- Not Challenging

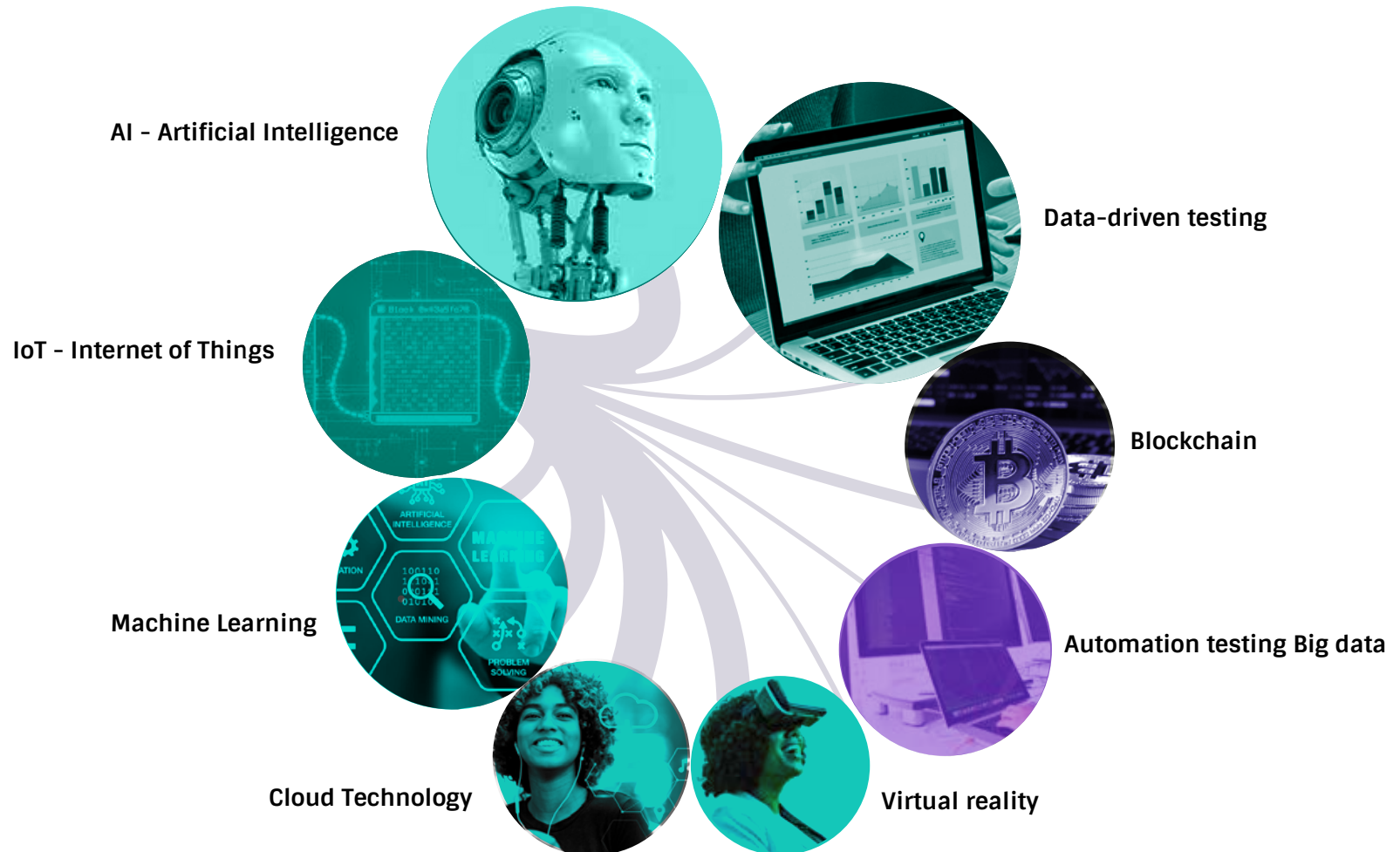
Changes to the way we test

As part of our “open questions” we like asking how people are implementing new things in their teams and processes and we got some pretty interesting responses:

- Added a testing dashboard. Visually show the team the impacts their changes make and use it as a catalyst to change the mindset of the team around modern testing practices.
- We introduced metrics to measure the success of testing
- Weekly run of what automated regression tests we have. Catching problems earlier
- More dev involvement in Automation.
- Introduced Mind-maps across organization.
- Have started getting the devs to test.
- Introduced API testing within the team
- We are hiring developers for test positions and working to improve code quality within the test codebase.
- Started working with exploratory testing. Seemed like a good combination with automated unit tests and functional tests. So far it has had a pretty good impact. If nothing else, it provides a new perspective on the system under test.
- We have been moving more towards Agile and Shift-left. This allowed us to catch bugs earlier than after the implementation.
- We started focusing on non-functional testing

New Technologies or Subjects in general that will be important to the testing world in 3 -5 years from now

Another open question we had for our respondents to try and understand what are going to be “hot topics” in the coming years. For all those young testers, or people asking themselves what technologies should I be investing my knowledge for the coming years, here are some interesting ideas!



Additional non-testing activities



Coaching teams



Production deployments



Monitoring and alerting writing user stories



Onboarding for new team members



Cross-functional - business analysis



Feature development



Managing releases



Developing a CI/CD Pipeline



Customer support and demos



Client consultant



UX Design



Scrum implementation



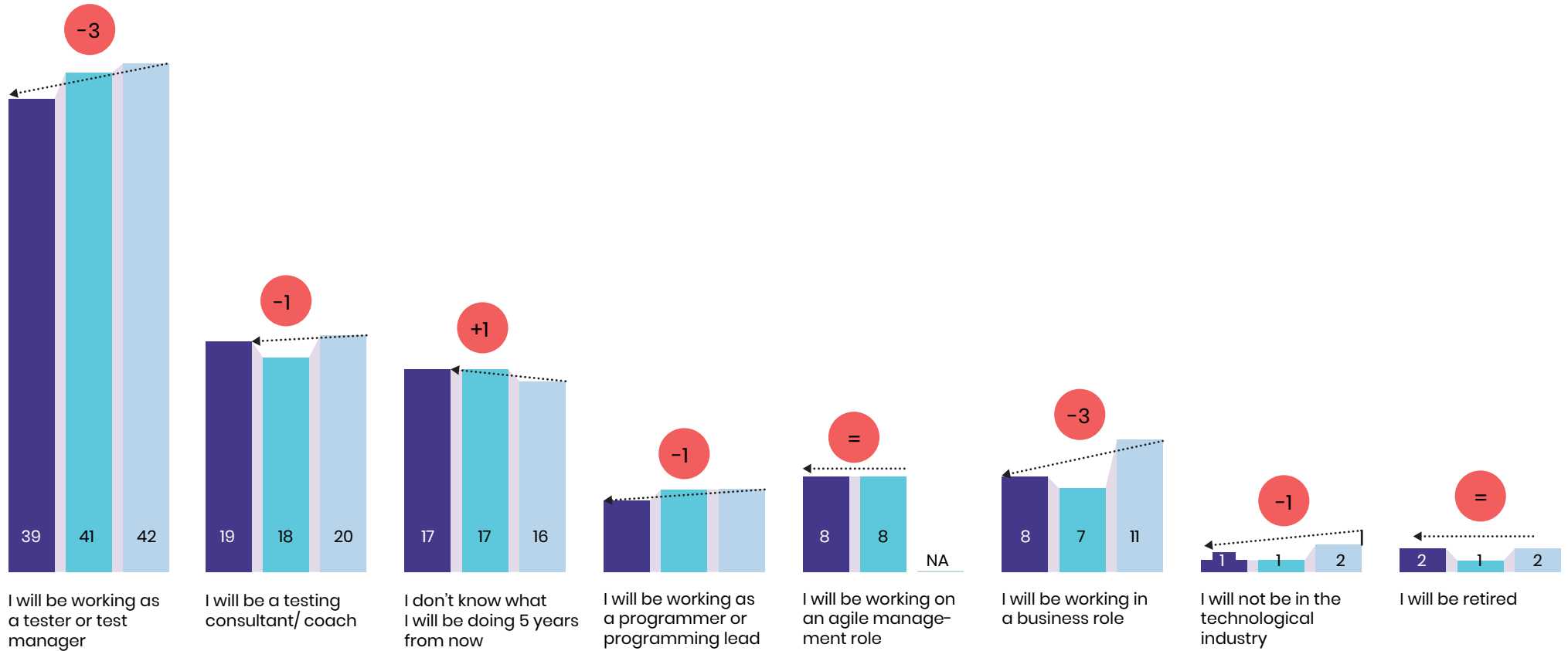
PERSONAL DEVELOPMENT

Testing skills and knowledge needed to succeed

	Very important	Important	Not important
Communication skills	75	23	2
Functional testing automation and scripting	63	33	4
API testing	60	36	5
Web technologies and testing	59	37	4
General testing methodologies	53	42	4
Security testing	47	45	8
Test automation patterns, principles, practices	47	46	7
Agile methodologies	46	44	10
Test / Experiment Design	45	48	7
Coaching / Training skills	40	49	11
Performance and load testing	39	52	8
Mobile technologies and testing	37	54	9
Customer facing skills	36	45	19
Data analysis	32	54	14
Microservices testing	30	51	19
Programming skills	29	57	14
Testing in the Cloud	27	51	22
Business skills	22	50	27
Machine learning testing / AI	21	51	28
Enterprise software and process testing (ERP, CRM, BI, etc)	20	51	29
Big data testing	19	56	26
IoT testing (Internet of Things)	18	51	31
Embedded systems and testing	17	54	29
Operations management	14	53	33

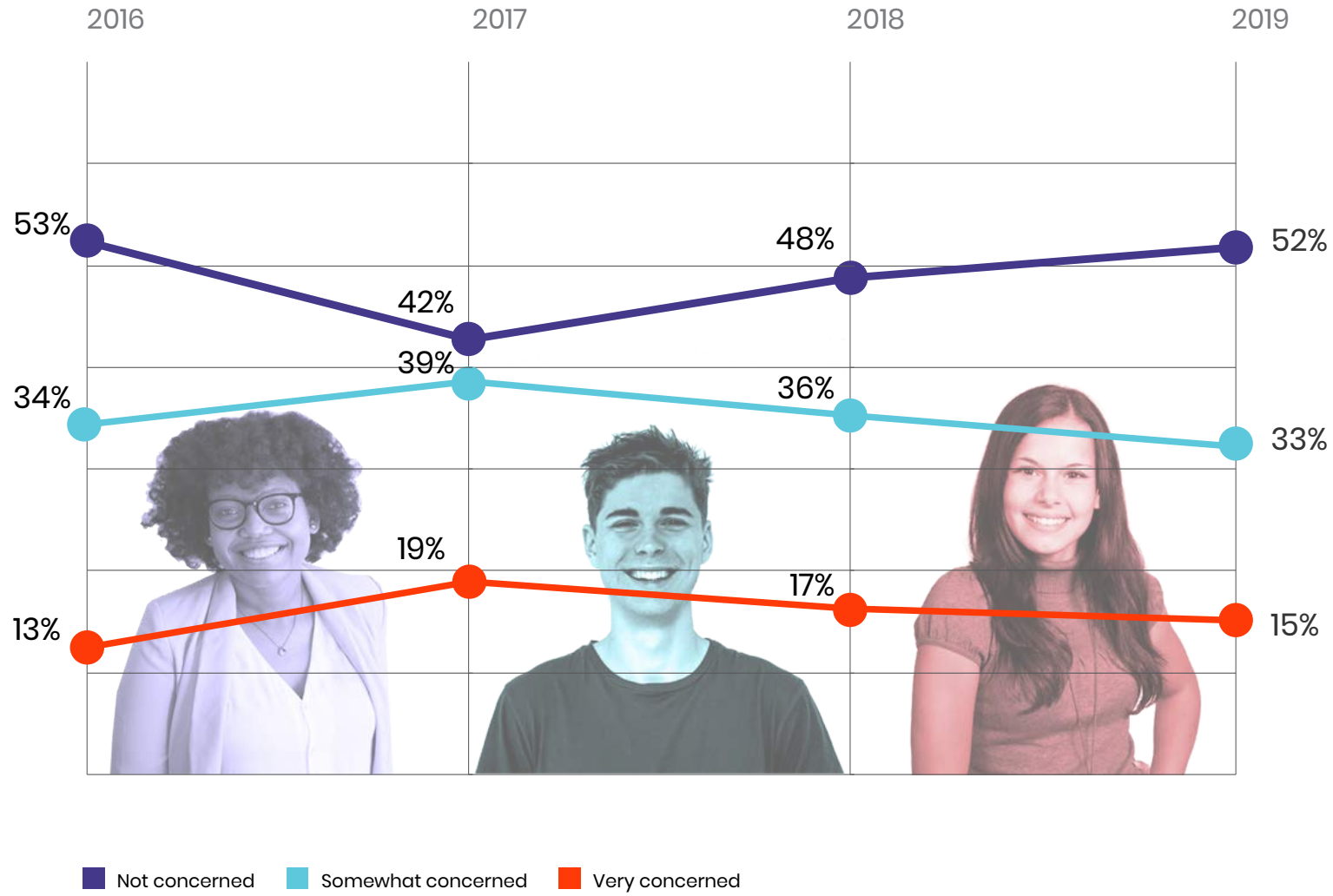
The Future of Testing %

Where do you see yourself 5 years from now?




2019 2018 2017

How concerned are you about your job stability




What are managers looking for when hiring testers?

What are the new desired skills you are looking for when hiring for a testing job?


 More emphasis on test automation / coding abilities

 Self learner


 Programming skills and Product/Business thinking


 Problem solvers and multi-task


 Team player (works well with developers)


 Assertive and creative thinkers


 Enthusiasm


 More front end experience

 Good communication skills and emotionally intelligent

 Load testing and Security testing knowledge


 Problem solving; proactive; results-oriented with technical skills


 IoT knowledge awareness


 Automation tool experience

 Coaching and Leadership

 Agile related skills

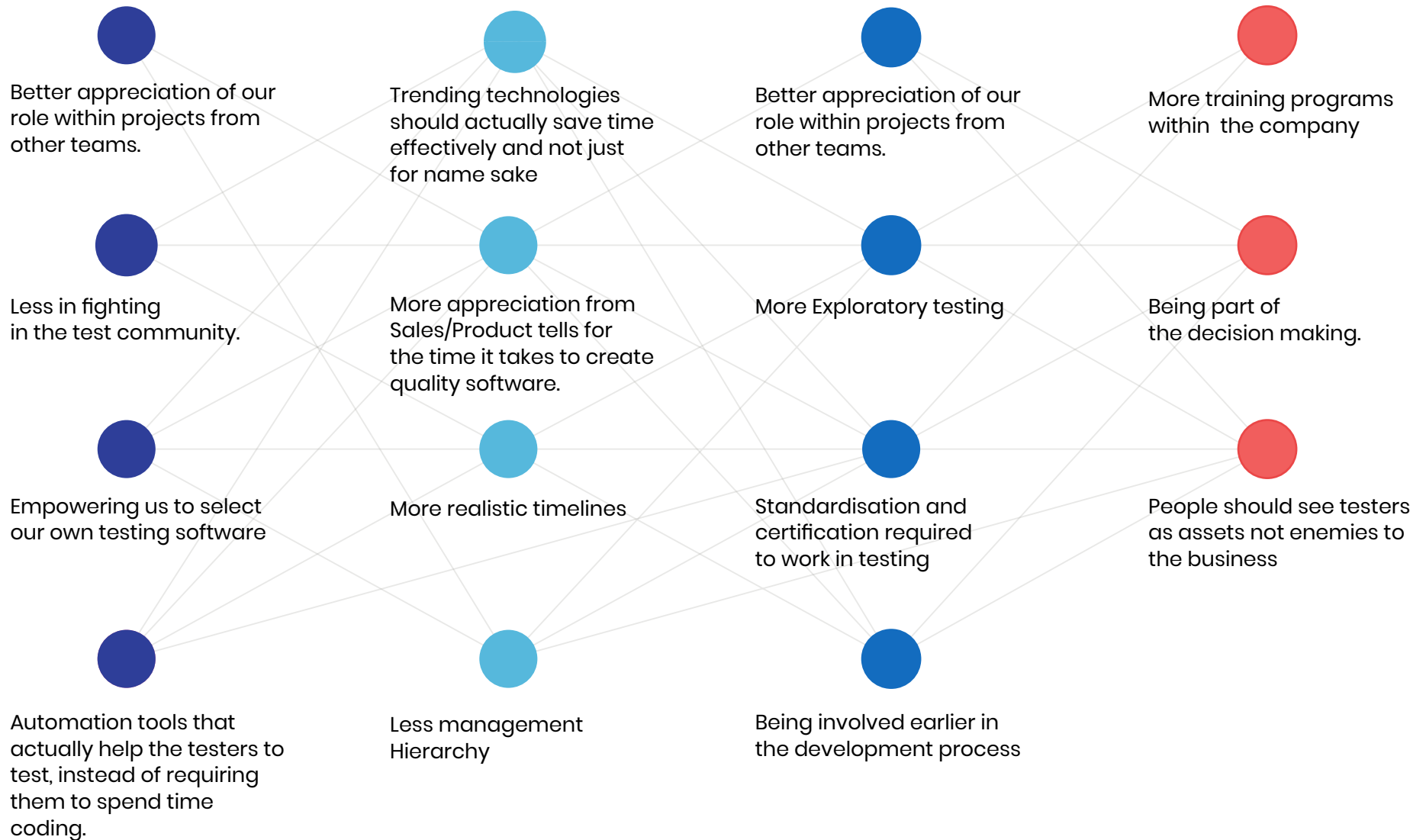
 Adaptability and flexibility

 Experience with CI/CD

 "Puzzle solvers"

Our ideal testing world in the future

What are testers hoping will change or improve



What did we learn from this year's State of Testing?

We are sure that each of us will get something different from all the information contained in the report, and as many in our profession remind us constantly, the reason for this is that everything will be based on the context.

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People who are new to the report may get a better understanding of their personal journey with regards to how others in the industry are working. "Younger" testers should be able to understand the wide range of opportunities for professional growth and the great challenges that await them. Managers and leaders will no-doubt see how their reality is shared by many, and get ideas on how to move forward in ways that might not have been apparent before.

Regardless of who you are, where you are, and what your title is, you will be able to draw yourself a map showing the different paths and options that are available to you. This is the x factor of the information we gathered; showing not only a snapshot but a moving trend.

It is very difficult for us to define exactly what we "see" in the report. The best description for it might be a "feeling" of change, maybe even of evolution.

We are seeing many indications reinforcing the increasing collaboration of test and dev, showing how the lines between our teams are getting blurrier with time.

We are also seeing how the responsibility of testers is expanding, and the additional tasks that are being required from us in different areas of the team's tasks and challenges. We were also able to see some low level changes and expansions in the technologies tested, the technologies used to test, and the technologies that may be relevant in the future.

More importantly, we see how testers have a broader and brighter perspective of their professional future.

We are already thinking about what we want to ask next year, and what information we hope to capture, but that will need to wait a few more months.

We were also able to see some of the more low level changes and expansions in the technologies tested, the ones used to test, and the ones that may or will be relevant in the future.

Maybe more importantly we are seeing how testers have a broader and also brighter perspective of their future professionally.

We are already thinking about what we want to ask next year, and what information we hope to capture, but that will need to wait some more months.

Until next year!

Lalit and Joel



About us



About Practitest

PractiTest is an end-to-end QA and Test management solution, designed to help users control their testing and development process, focusing on how to manage their project and its information, and how to communicate testing outcomes to all the relevant stakeholders. The software allow users to organize requirements, create and run tests, tracks bugs etc. Integrations are available with top bug tracking tools including: JIRA, Bugzilla, RedMine and Pivotal Tracker as well as automation tools such as Selenium, JUnit, SoapUI, QTP, Jenkins,- Circle CI, productivity applications such as Slack and many more.

To learn more and get your 15 days free trial visit our site: <https://www.practitest.com>



About Tea-Time with testers

Tea-time with Testers, is the largest-circulated software testing monthly in the world. As the wave of change sweeps business, testing field and community of testers like never before, Tea-time with Testers has ensured that its readers have all the necessary upgrades to challenge tomorrow. It takes its readers deeper to give a complete understanding of the world of software testing. Ever since its inception in 2011, it has set one benchmark after another in testing publication circle. It was the first to do serious reporting on software testing theories and thoughts. And then again, it is the first to bring a whole new genre of technical/corporate journalism more up close and more incisive. It is the only monthly magazine in global testing community known for quality of its content, authors and unique way of presenting the information. Today, Tea-time with Testers commands the highest circulation and readership among all English language testing magazines in the world.

To learn more visit site: <http://www.teatimewithtesters.com/>

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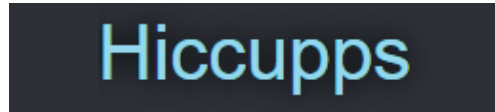
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