



# STATE OF TESTING

Report | 2017

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# State of Testing project

“What’s happening in the software testing world lately?” has become a question we are frequently asked ever since we started to publish the State of Testing report, four years ago!

The interesting (and equally exciting) fact is that this year we are actively getting approached by many testers asking when the State of Testing Report 2017 will be out. This tells us a lot about the value this project is providing to the worldwide QA Community.

Well, based on the information and the trends in this latest survey, it appears that 2016 was an eventful year for most testers if not for all of us. As we expected, the change drivers like technology, development methodologies, tools and techniques appear to be raising the bar higher for testing professionals, making our work more challenging and interesting than ever before.

From what we gathered, and based on the information provided by all

the participants, we believe that what we are seeing is nothing but a “trailer” for the movie of challenges that is just beginning and will continue in the years to come :)

But challenges are very often the gateways to great opportunities, aren’t they?

Based on some of the “new” cool things that appear in this survey, and looking at the existing trends picking up momentum, we are certain that testers are going to “nail it down” just like we always have!

So what are these challenges we are talking about? What is likely to raise the bar even higher? What tools, techniques and skills will help testers fight it out? We invite you to read about them in this report and find out for yourselves.

Please pay special attention to some of the legends we added to the metrics and graphs to avoid any confusion. As in previous years, we tried to analyse the survey as

carefully as we could and have also written down the conclusions we came up with for some of the sections. But of course, we encourage you to read between the lines and draw your own inferences too. We’ll be more than happy to know what “you” think.

That said, we hope you find this report as useful as you’ve found it to be in past. If you have any questions, please feel free to reach out to us anytime. You’ll find our contact details at the end of this report.

Oh, and how could we forget our review panelists and collaborators who helped us shape the survey this year and make it our largest survey yet? We got over 1600 responses, making it our largest survey ever!, and so we want to send our special thanks to everyone who helped us make it happen, and of course to all the participants for their inputs.

*Enjoy and please spread this joy further!*

*Lalit and Joel*

## About the State of Testing Survey

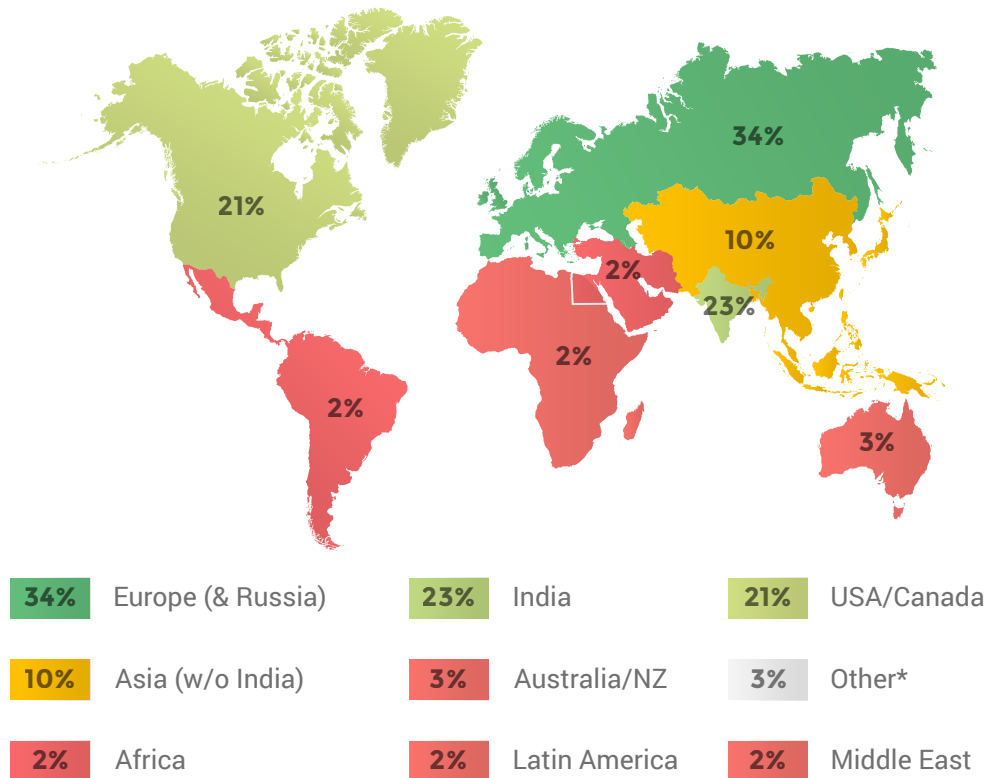
The State of Testing is the largest testing survey worldwide. With more than 1,600 participants from more than 60 countries, the survey aims to provide the most accurate information of the testing profession and the global testing community. Held yearly, the survey also captures current and future trends.

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.

# Respondents Demographics & Professional Profiles

## Geographical location



\*Many of the "Other" are from the UK: Brexit? :-)

## Title of the respondents



This year most of the respondents were Testers or Test Analysts, and this was up to 44.3% from 37% last year. We also see a larger number of respondents defining themselves as Software Engineers, something that may point at change in the type of work and the way the Industry sees the world of testing lately.

Among the "other" we had people saying they are Embedded Testers, Product Evangelists, Developers in Test, Developers and DevOps Engineers, Test and Agile Coaches, Scrum Masters, Product Managers, Students, and one Tourister (*If you have any idea what that means please contact us!!*)



## Years working in software testing field



This year we are see more respondents who are newer to testing than in previous years. We noticed a marked increase in those who have been in testing for less than a year, from 5% last year to 9% this year. The decrease of “more experienced” testers comes from the top categories of 5 to 10 and 10+ years in the profession.

Looking deeper into these numbers, we see that the some geographical zones are “younger” than others, meaning that these are places where a they have a comparative number of testers that are starting their careers, these zones are India, Eastern Europe and China.

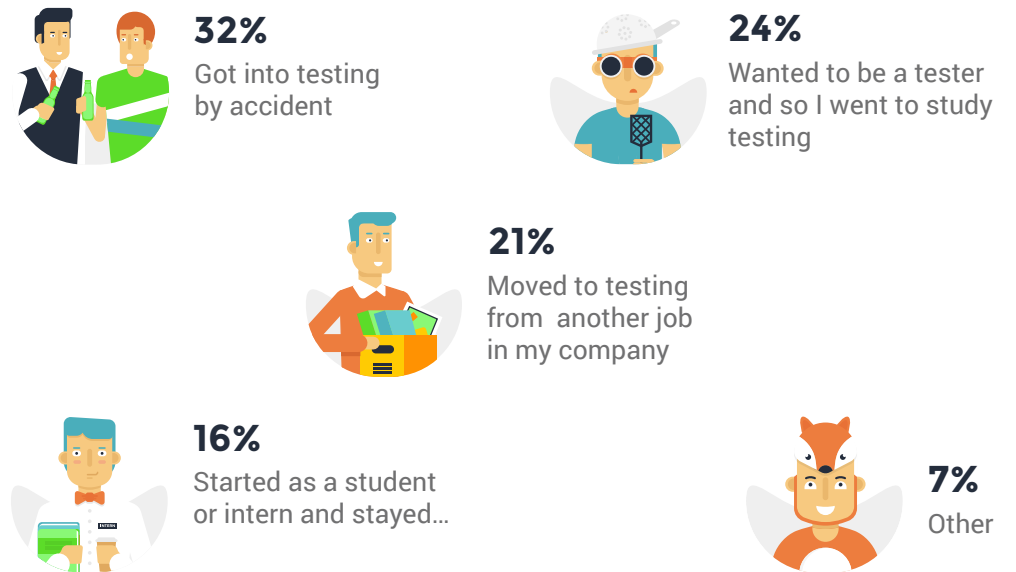
This is in contrast to places where they have more testers with comparatively more experience, like North America, Western Europe and (and what?) Australia or New Zealand.

Another thing we can see from looking at the numbers is the fact that smaller companies tend to have a higher number of less experienced testers than larger ones. This means that if you or a friend is starting his way in the testing world, the recommendation is to look for a startup or young company that will be more willing to give you an chance to get started.

### What’s in it for me?

If you or someone you know is starting his/her testing career, it is better to look for work in a smaller company or a startup firm, instead of looking for work in a bigger corporate organization.

## The paths that lead testers to testing



Among the “other” we saw some interesting responses: people who moved from programming or IT into Testing, gamers who decided to work in gaming as testers, someone who went for drinks with the PM of the IT and ended up a testers (Cool story!), someone who always had a passion for breaking things and choose to make it into his profession.

When we look into the numbers, we can see there is a strong correlation

between people who got into testing by accident or from another job and those that have been in testing for a longer time. On the other hand the correlation is also high between newer testers that went and studied testing since they wanted to be testers. This may be due to the fact that lately testing is something that is being taught more formally and that people simply know about more.

# Testing salaries around the world

There is a jump in salaries compared to last year in a number of areas around the world, with the USA / Canada, Latin America and Eastern Europe / Russia enjoying the largest gains in reported salary. On the other hand India, as a geographical area, showed similar salaries to previous years.



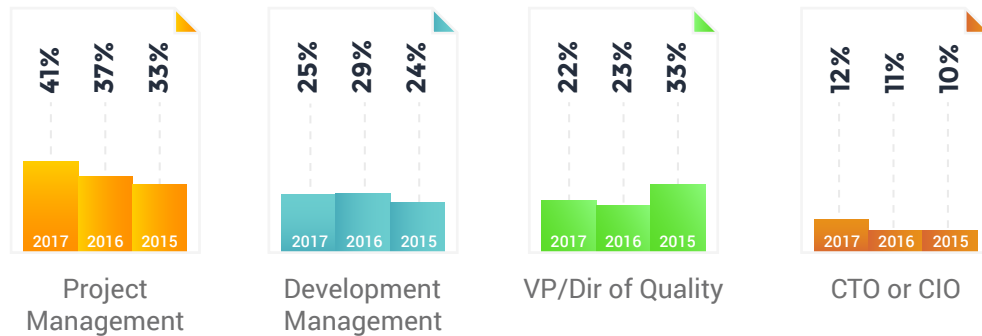
	> 1 year	1-2 years	2-5 years	5-10 years	10+ years
Africa	NA*	\$5 000	\$28 000	\$37 000	NA*
Asia	NA*	\$9 000	\$18 000	\$36 000	\$44 000
China	NA*	NA*	\$12 000	\$22 000	NA*
India	\$10 000	\$11 000	\$22 000	\$28 000	\$37 000
Latin America	NA*	\$11 000	\$16 000	\$27 000	\$57 000
East Europe / Russia	\$9 000	\$15 000	\$21 000	\$33 000	\$71 000
Western Europe	\$26 000	\$28 000	\$41 000	\$47 000	\$78 000
Middle East	NA*	NA*	\$38 000	\$97 000	\$99 000
Australia / NZ	NA*	\$40 000	\$46 000	\$105 000	\$123 000
USA / Canada	\$25 000	\$67 000	\$90 000	\$107 000	\$125 000

\* Salaries in thousands of USD and include bonus and perks if any.

\* NA - not enough information to provide meaningful information.

# The Testing Function in the Organization

## Organizational place of the testing team



We see a trend where the Testing Function is reporting more and more to the Project Management and less to a VP or Director of QA. We also see a small increase in the number of testing teams reporting directly to the CTO/CIO.

Looking at the numbers, there is a small correlation between the size of the R&D team and whether testers will be reporting to the CTO/CIO or a VP/Director of Quality.

What we do see, is that in smaller companies the shift is towards reporting to the CTO/CIO directly while in larger companies there is a shift towards reporting to the VP/Dir of Quality.

Still, we see that in both these cases the quality function is independent from the other functions, pointing toward the value of providing unbiased and independent feedback to the organization.

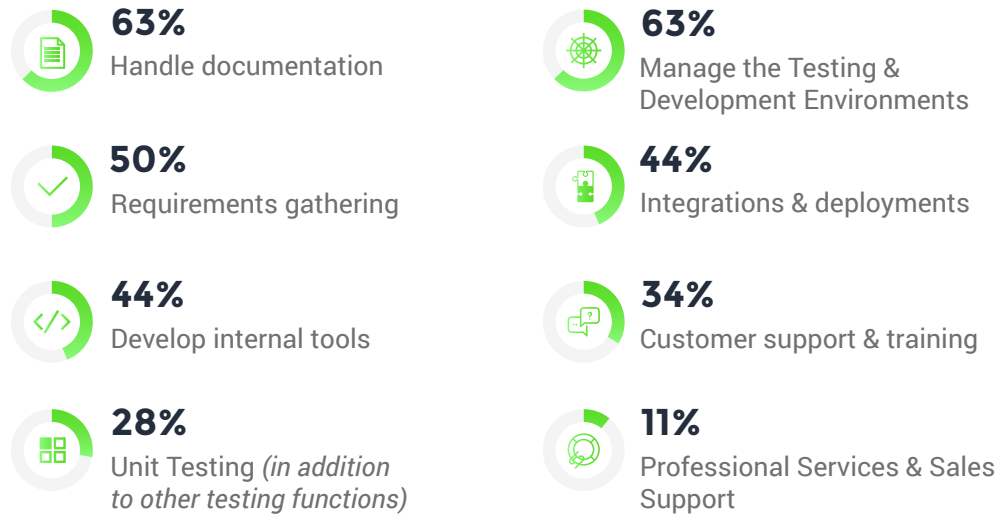
## Size of the testing teams



The trend we saw last year continues to show that testing teams are getting smaller year after year. If last year 60% of the respondents worked on teams of 15 testers or less, this year the number is already 70%, and the biggest jump was on teams of 1 to 5 testers that jumped from 34% of respondents last year to 43% this year.

Companies working Agile-like or without a structured model tend to have smaller teams, this is not very surprising. What is more surprising is that ¼ of the respondents who said their companies work with DevOps like methodologies reported being part of a team with 51+ testers.

## Additional tasks of testers



Total can surpass 100% as respondents could select multiple answers.

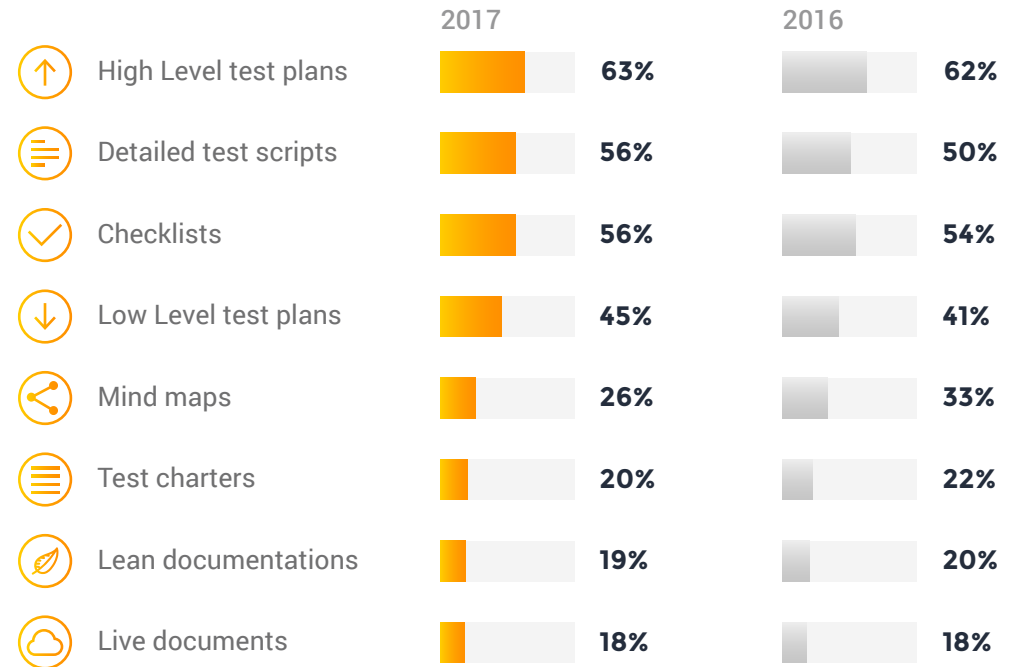
The biggest jumps have been in regards to the work they do on Development and Testing environments that reached 63% from 49% last year. We believe this is largely influenced by the increasing adoption of Agile and DevOps development approaches. We also saw a notable jump from 51% to 63% this year for testers that are handling documentation.

There may be a number of reasons for this: Testers are taking a more active role in Agile Functional Teams documenting features, or testers given the responsibility to document some non-testing related topics of their project, or maybe testers who are spending more time documenting their work, which is a welcome change, but may also be a burden when they are working on documentation more than on the actual testing itself.

### What's in it for me?

When looking for tasks that will help you to boost your testing career, try focusing on helping the documentation gets created correctly and also on more technical tasks such as managing environments and taking part of the deployment and integration operations.

## Testing documentation



Total can surpass 100% as respondents could select multiple answers.

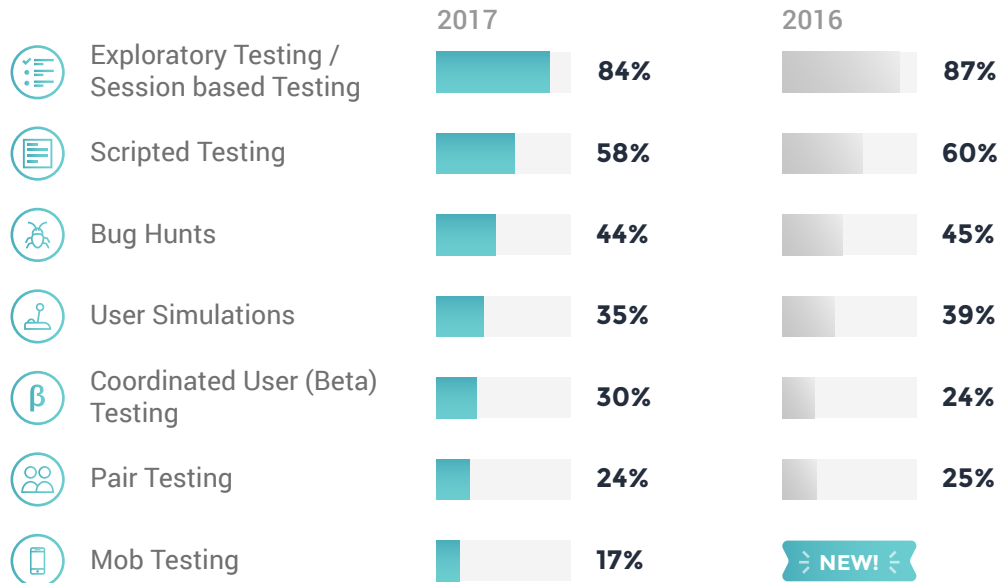
We see a small increase in the usage of Test Plans and Scripts, with a small decrease in the use of leaner documentation such as Mindmaps and charters.

There were also people answering they also create Release Notes, Tip Sheets for clients, Snapshots in user stories and even Youtube videos for Online Help.

There was also one response that won the heart of the editing staff: "We are discouraged from documentation because it takes too much time according to our fearless scrum masters..." To this person we say, don't desist your fight! Scrum masters get replaced, your testing integrity not!



## Testing approaches and methodologies



Total can surpass 100% as respondents could select multiple answers.

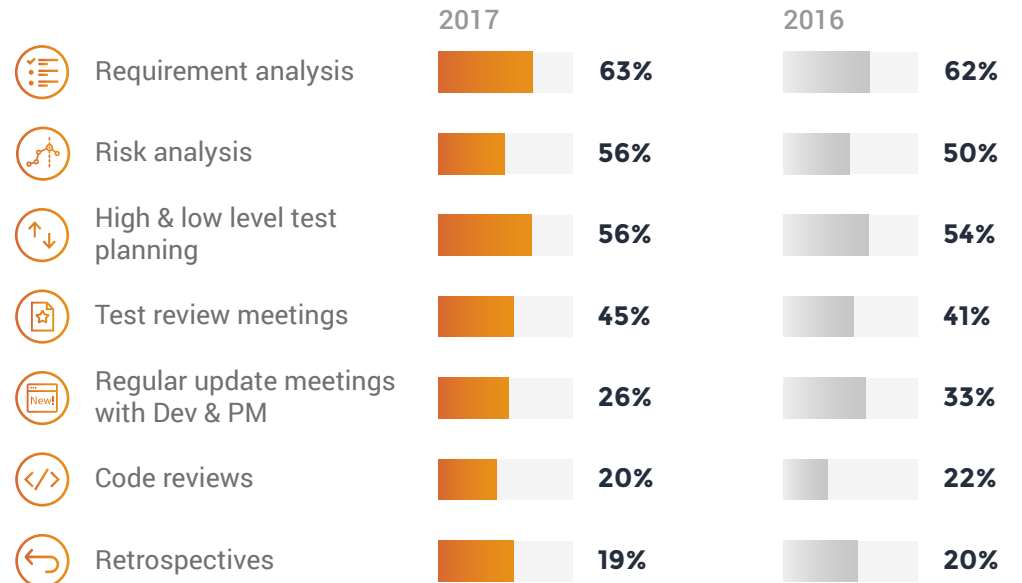
There is more or less the same distribution of the testing types as in previous reports, but on the other we see less people mixing 3 or more different types of testing. We also see a small increase in the number of organizations doing Beta Testing, 30% this year from 24% last year.

As it was to be expected, the larger companies work with the highest levels of scripted testing compared to smaller companies, but this was also true for Exploratory Testing!

Another insight that is interesting is to see the correlation between experience in testing and the usage of these methods. With a marked increase in the use of both Exploratory Testing and Scripted Testing as testers become more experienced.

Some additional comments on how people test included "Testing in production", Persona Profiling, and a couple of people mentioning Monkey Testing.

## Static testing activities



Total can surpass 100% as respondents could select multiple answers.

There is an increase in most of these activities from last year to this year, with the biggest jump registered in Code reviews (*from 33% to 43%*) and Requirements analysis (*from 64% to 70%*) from last year to this year.

In all these categories, as the companies grow in size we see a bigger adoption of these

static testing activities. There was also a level of correlation between experience in testing and the adoption of a couple of these static testing activities, with High and Low Level Test Planning as well as Code Reviews and Retrospectives being more common as testers became more experienced in their work.

### What's in it for me?

There are many testing methods, and most professional testers will blend a number of these approaches in order to test more effectively and efficiently. Also, remember that testing is not only about working with the application, there are a large number of static activities you can do to improve your testing!

# Training, skills and formation

## Common sources of knowledge and learning for testers



**64%**

Testing books



**48%**

Peer mentoring



**44%**

Online communities and forums



**43%**

Formal Training



**43%**

Certifications and Courses



**40%**

Webinars and podcasts



**38%**

Conferences, meetups and seminars



**36%**

Facebook, twitter, linkedin and blogs



**34%**

Magazines



**17%**

From other fields (e.g. psychology, writing, etc)



**4%**

Weekend Testing and Miagi Do



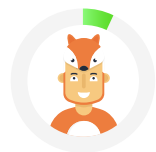
**7%**

Testing Diplomas



**7%**

Testing competitions



**7%**

Other

Testing books are the top source for training and knowledge in the industry, followed by peer mentoring and then Online communities and forums. Formal training is constantly rising, reaching 43% of this year's respondents (*up from 23% last year and 17% two years ago!*), and along these lines certifications are also up.

Looking closer at the numbers we see some areas that become more predominant as testers work more years in the field. For example, learning from other fields, listening to webinars and podcasts, and participating in online communities and forums.

Based on geographies, Certifications are especially strong in Australia/NZ, Western Europe and Africa, while particularly weak in North America, Asia and India. Conferences and Meetups are stronger in North America, Europe and Australia/NZ compared to the rest of the world, and interestingly enough so are Webinars and Podcasts.

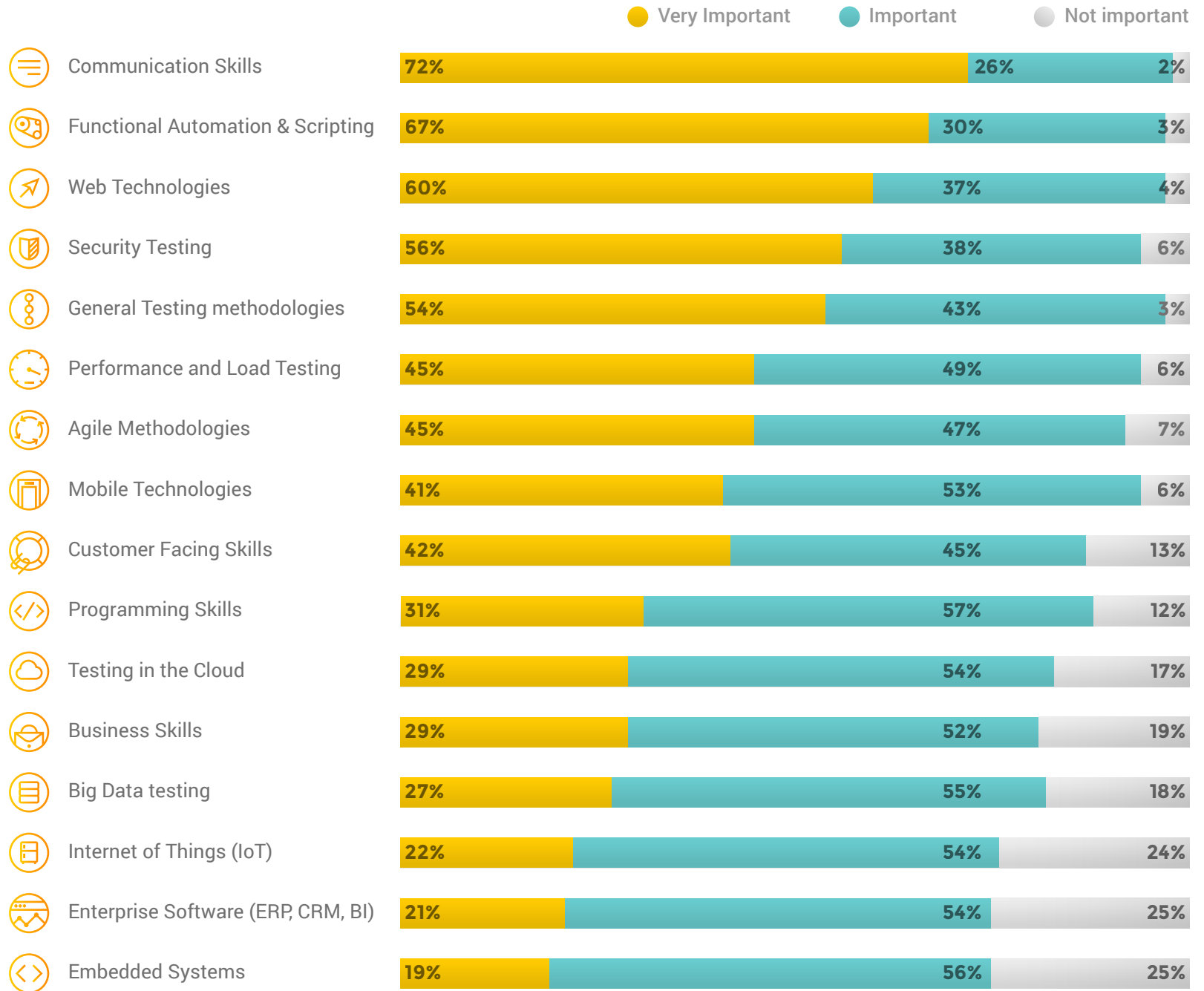
Total can surpass 100% as respondents could select multiple answers.

# Skills you need to be a good tester











































Comparing these numbers to last year's, many of them keep very similar values, but there are some interesting shifts worth noticing as they may point at trends in the Industry.

We see more people giving a higher importance to Functional Automation and Scripting (*and programming skills*), Security Testing, Big Data.

People added other skills that are also needed such as: Analytical Skills, Critical Thinking, Soft skills and networking, Skepticism, Self learning, Writing Skills, General Technical Understanding, Leadership, Risk Analysis, Creativity, Diplomacy, Adaptability, Our personal favourites: HUMOR & PATIENCE!!



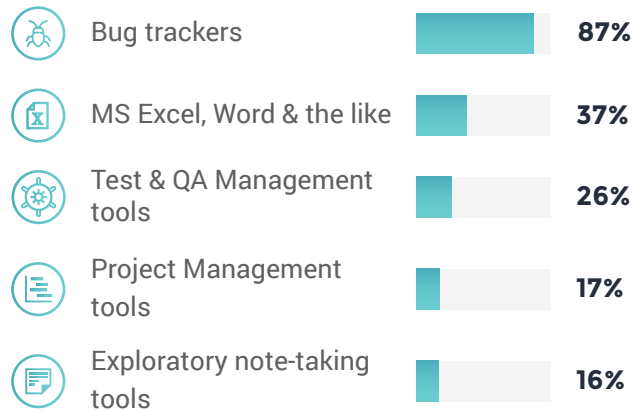
# More people attending more interesting conferences than last year, here are some of them!

 OnlineTestConf	 AgileTestingDays	 WeTest Conference	 Quality Excites	 Testing Cup	 CAST	 Let's Test	 JaSST
 WACATE	 QAI Quest	 WrotQA	 Automation Guild	 ExpoQA	 MadQA	 STPCon	 Tabara de Testare
 STWC	 QAFest (in Keiv)	 TestNet Conference	 Eurostar	 QA&Test	 Star Canada	 Dutch Testing Day	 Nordic testing days
 QA or the Highway	 VodQA	 SQiP	 SoftCon 2016	 Test Atelier	 StarEast & StarWest	 TISQA	 TestFest
 J'oburg Software Testers Meetup	 Pacific Northway Software Quality Conference	 Melbourne Testing Conference	 TestBash Manchester	 GTAC	 KWSQA Conference	 A&A Days	 TestingUY
 TestBash Brighton	 TestBash Philly						

**What's in it for me?**  
 Today many events are free and/or online, there is no real excuse for not choosing 2 or 3 and making it an objective to attend a number of events that will help you push your career forward.

# Testing Process

## Tools used to manage your testing



Total can surpass 100% as respondents could select multiple answers.

Overall we see this year more people from the testing teams are handling tasks that are outside of their proper testing work. This may reflect the fact that testers are more and more part of functional teams where people work on multiple tasks.

### What's in it for me?

Innovation is a key element for every person looking to advance on his or her career. A practical and even easy way to do this is by exploring and implementing a new tool in your work.









## Adoptions of new testing tools



We wanted to know how often testers introduce new tools into their practices and for this we asked if they had introduced new tools in the past year. We were a little surprised to see that more than half the respondents answered YES, as we were thinking this was done with less frequency.

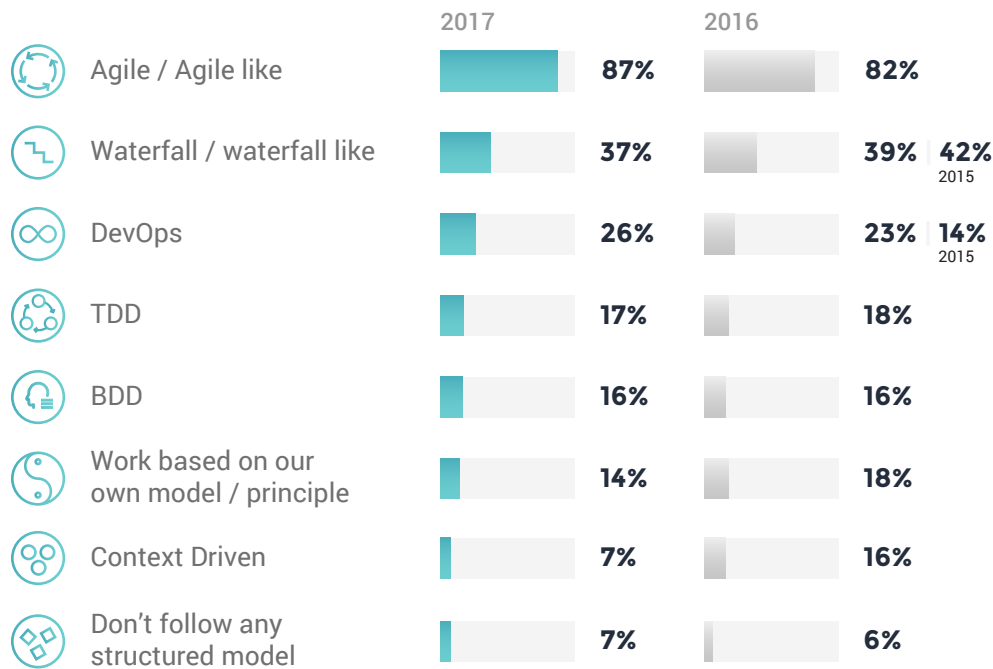
We then asked an open question to check what tools had they started using and we got responses pointing at tools for:

-  Test Management
-  Automation (*many people starting to work with Selenium*)
-  CI frameworks
-  BDD tools
-  Load testing tools
-  And others

Total can surpass 100% as respondents could select multiple answers.



## Development models



It is very interesting to see how the adoption of agile is becoming almost universal, with close to 87% of respondents saying they work with Agile or Agile-like methodologies. As a reference last year this number was 82% so there is an increase here even at these high percentages.

Another clear trend is the adoption of DevOps, with 26% of respondents

this year, in comparison to 23% last year and only 14% 2 years ago. The other side of this coin is Waterfall that has dropped to 37% from 39% last year and 42% 2 years ago.

There was also one original respondent who said they work based on "Chaos Principles" :-)

## CI and CD



This is a new question, but a very interesting one, CI/CD are almost a standard in the world today with 75% of respondents saying they use it either all the time or at least in some projects.

To the people who do not know what CI/CD is, you better hurry up

Total can surpass 100% as respondents could select multiple answers.

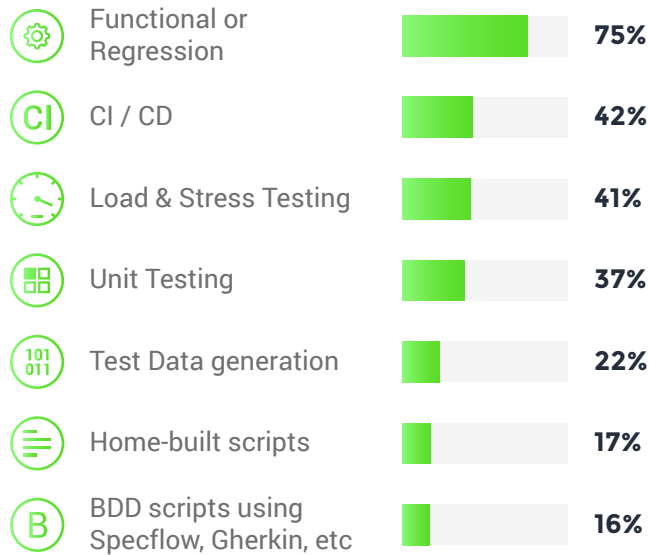
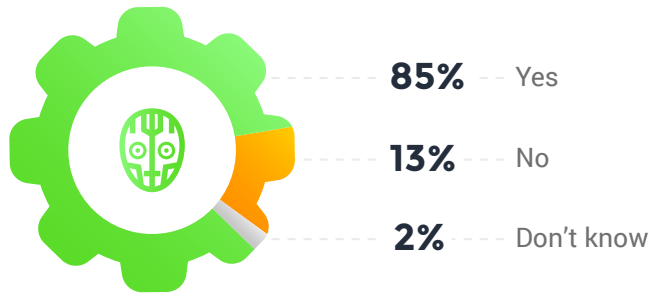
and learn what it is. Most probably you can ask your R&D as they are surely using it!

Among the other answers we saw most answered that while they are not using it now, they are planning on implementing it soon!

### What's in it for me?

The trend is clear, if you are not already working in tune with your CI/CD process you need to get around to it NOW!

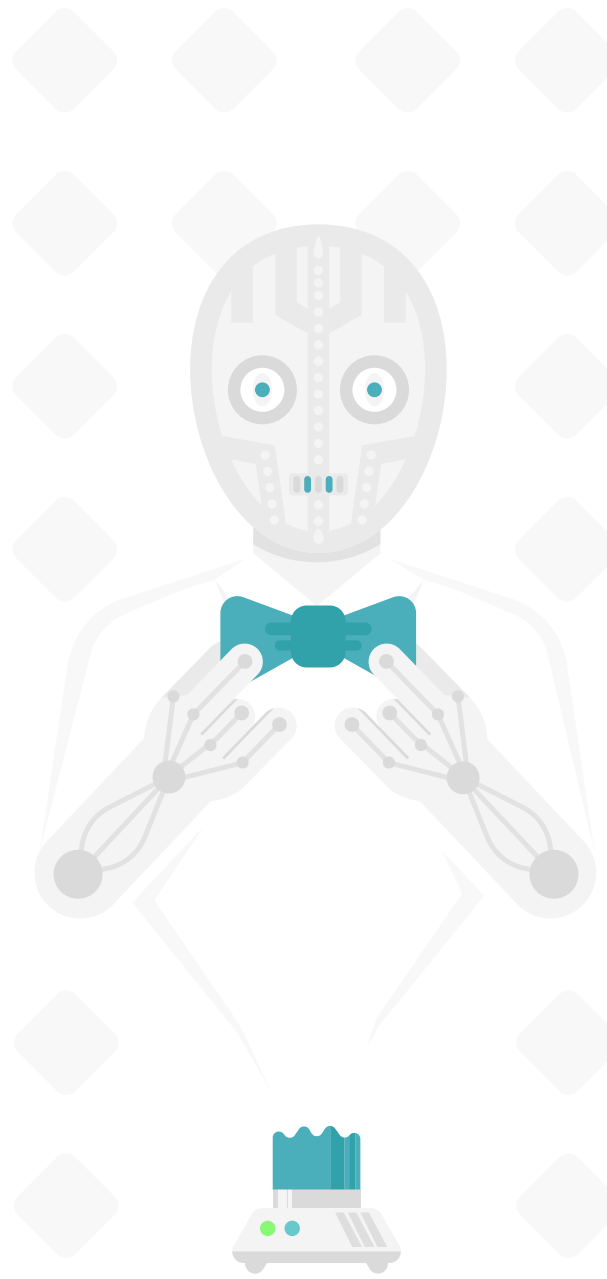
# Automation in your company



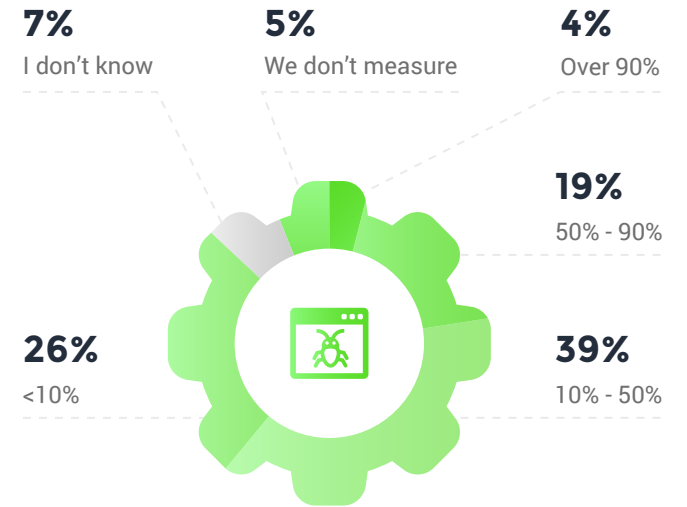
Total can surpass 100% as respondents could select multiple answers.

Overall the percentages of respondents using automation remains the same than as last year with 85% of the respondents.

We see a slight decrease in the number of people who said that they are using Home-built tools to 17% from 23% last year, and also those working on BDD scripts, to 16% from 21% last year.



We asked a follow up question of what percentage of their test cases are automated, and we got the following responses:



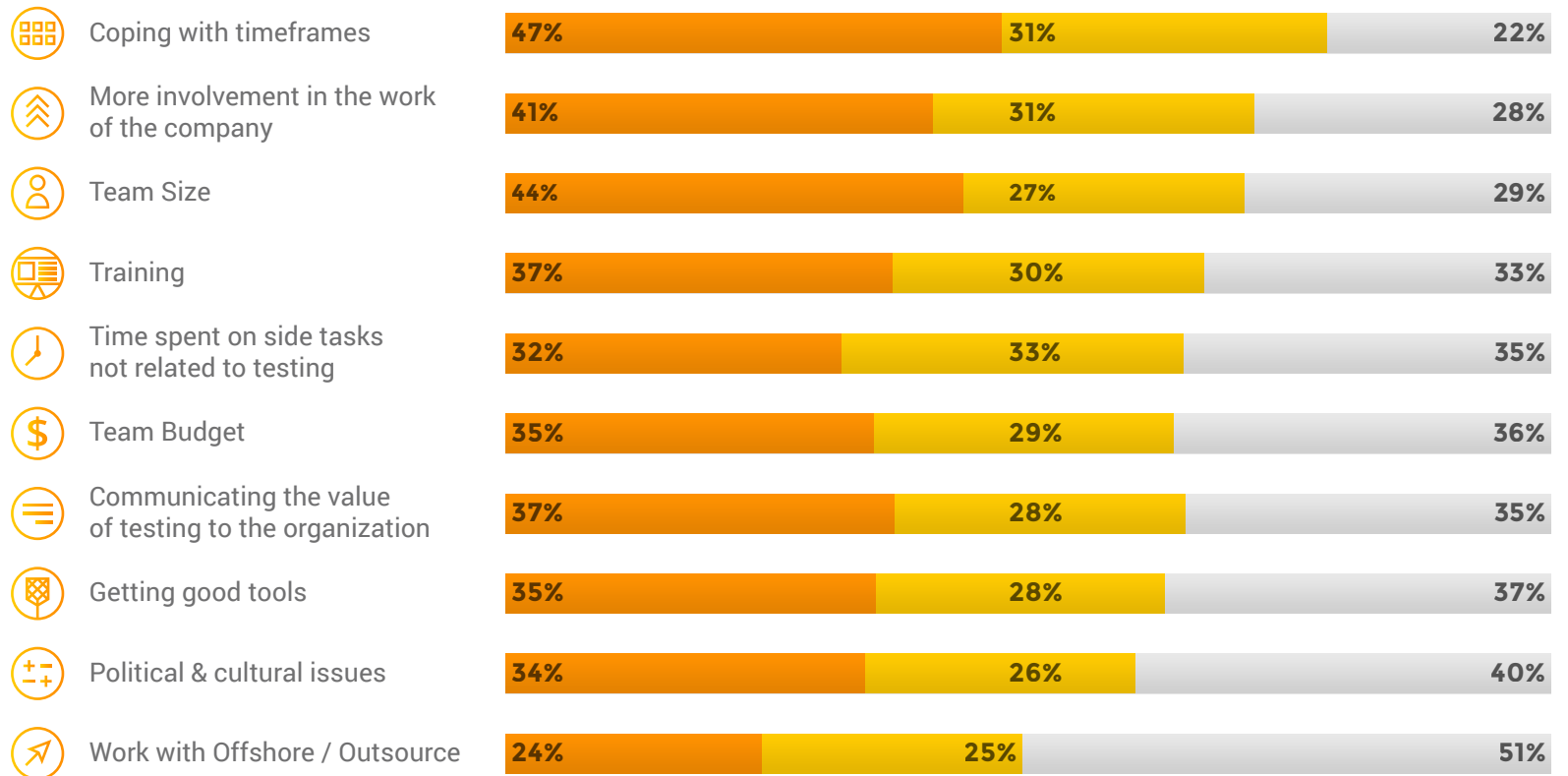
## What's in it for me?

Adding automation to your project does not necessarily mean automating all your tests. You can start by taking small steps that will lead you in the right direction. And nowadays you have tons of tools to choose from.

# The Present & the Future of Testing

## Test Team Challenges

Among the “other” answers we also got: sharing knowledge among team members, planning backwards (*as dates are promised before planning is done!*), not being brought into the project early enough, unstructured testing process, clarifying requirements, transitioning to agile from waterfall, coping with the attitude of the development team, keeping the team motivated, unwillingness to improve the processes, the biggest challenge we have is being taken seriously by management!



## Changes to the way we test

We asked this as an open question to understand how people are implementing new things in their teams and processes and we got some pretty interesting responses:

- ]] I have moved toward lean documentation because the extensive formal documentation I was doing wasted a lot of time without adding very much value.
- ]] Trying to teach developer show to test their tasks.
- ]] Metrics, specifically in looking for insightful trends rather than seeking percentages and translating that new approach up to management.
- ]] Working with offshore / outsourcing to increase the testing team size to have the possibility to support a higher number of projects in the organization.
- ]] More focus on planning. Religiously used Impact matrices to make sure regression is not an issue.
- ]] I introduced snapshots to the team. I also introduced a lot of batch scripts that make life easier. Also was the driving force for a QA environment that is automatically updated to the newest build nightly.
- ]] Formalized the testing process. No real processes in place before this year. Organized the team to test in sprint. Allows the team to keep up with development and keep the project moving forward with an appropriate understanding of done for stories...
- ]] We reduced the time for regression each sprint from 1 week to 1 day. We automated most of the happy flows. Testing team is making the decision each sprint on what to automate...
- ]] We're adapting to Continuous Delivery. We're also working as test coaches to support developers to do more testing.
- ]] Dedicated myself to bridging the (communication) gap between the diverse function types in my organization...
- ]] Keep a clean demeanor, always be smiling, and make people laugh.
- ]] We moved from extensive 'Master test planning' to 'global test planning for a 3 month-period'. We depend on sprint planning for detailed test planning.
- ]] Combined manual and automation testing teams. All manual testers were trained in automation tools.
- ]] Started running kickoff meetings before development starts on an issue, with a tester, developer and reviewer to discuss requirements and design...
- ]] We've created a simple web form for devs to insert what they want us to test in the test plan along with other stakeholders in an organized way.



# Which new Technologies or Subjects in general 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 the “hot topics” going to be in the coming years.

For all those young testers, or people asking themselves what technologies and knowledge they should be investing their time in for the coming years, here are some interesting ideas!



## What's in it for me?

Many times we ask ourselves what will be “hot” in the coming years (*to make sure we are in the right place at the right time*) and here you have some very concrete ideas of what's hot and getting hotter!



# Career & Personal Development

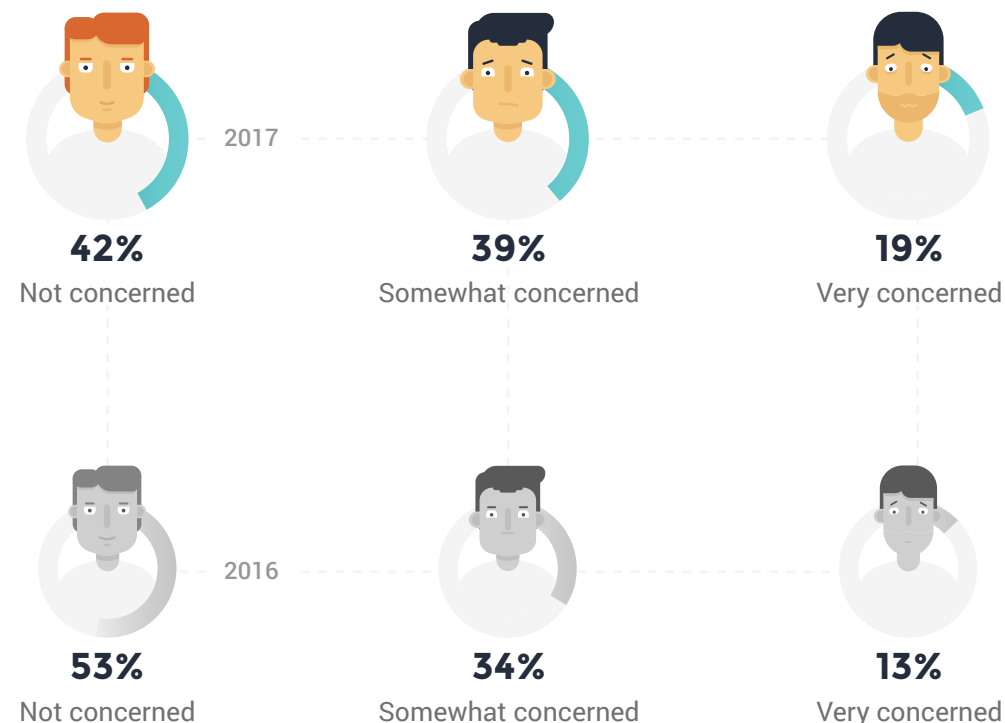
## You in 5 years from now



We see a small decrease in the number of people who see themselves continuing working as testers (*from 46% last year to 42%*) and as testing consultants, and

these numbers are shifting towards people saying they will be in business roles (*11% this year vs 7% last year*) and programming roles as well.

## How concerned are you about your job stability?



This is another of our thermometer questions, to understand the overall stability testers feel in their jobs. And this year we are seeing larger levels of concern in comparison

to the previous year with more than half of the respondents being either somewhat or very concerned with their job stability.

# What are managers looking for when hiring testers?


We asked hiring managers what are they looking for today in their testers when hiring new positions, among the things they are looking for we saw the following:



Problem Solving /  
Logical / Curiosity




Creativity



Testing mindset



Ability to think  
outside the box




Technical




Communication and  
Listening skills or Clarity



Positive /  
Good attitude




Ability to adapt  
to changes quickly



Motivation / Drive



Self initiative



Team Player



Attention to detail  
or Preciseness



## What's in it for me?

This question is good both for (*new*) managers that don't know what is important to look for in their new team members, but also for testers preparing for a job interview!

## Our ideal testing world in the future

We asked this as an open question to understand how people are implementing new things in their teams and processes and we got some pretty interesting responses:

- ” I would like the industry to show a better understanding of the role and the importance of the tester in the success of the product/business.
- ” More women in the industry...
- ” More innovation, better open source tooling.
- ” People, both testers and non-testers, getting better with talking about testing.
- ” Understanding that automation is not answer to everything and that more time spend on actual testing usually gives better results...
- ” Better understanding of how production problems can be avoided by having clearer traceability, more structured automation, and a dynamic knowledge base.



- ” ...I would like everyone to understand that QA is not a role-specific thing. Everyone is responsible for the quality of an application.
- ” People, both testers and non-testers, getting better with talking about testing.
- ” I'd like for people to understand the value we provide to them more. I feel sometimes we do our jobs too well so our value isn't visible in the end quality product.
- ” I want more testers in my organization to look as if they care about their profession.
- ” I'd like to see more passionate testers. I'd like more people to see testing as a profession.
- ” We need the passion for testing to sweep over the community like it did in the 80s and 90s for programming...

# Final Note

As you noticed, this year's report included a larger number of open questions that we asked testers and managers, and their answers helped us get a small but interesting glance into the more personal aspects of being a tester around the world.

It may sound strange and even fantastic, but there are more similarities than differences when we got into the difficulties and the challenges of the global testing community.

We all work with management that is more interested in delivering products quickly to meet market pressures than making sure these products are delivered by the right process. Most of us work under the shadow of a development team that gets most of the attention of the organization. And a very large number of us feel that people don't understand the actual value we provide to the process and to the organization!

When we reviewed the answers and the trends in our surveys, we found these answers to be really international.

But this means that we also have the chance of learning from our peers!

We can learn about the methodologies that are appearing and getting adopted by organizations worldwide, we can get ideas about technologies and solutions we should be using and implementing as part of our work to take testing to the next level, and we can understand what steps we need to take in order to help our companies understand the real value we testers provide to our processes, to our products, and above all to the team.

As a testing community, we have the knowledge to improve and the strength to make this happen!

Our State of Testing report is only a small drop in the sea of knowledge-sharing happening around the testing community. We invite you to take a more active part in the process of forging a better future for the testing world and to be part of this great group of people around the world!

Finally, we wanted to thank everyone who helped us create and deliver this 4th edition of the State of Testing Report. To our review committee, Jerry Weinberg, JeanAn Harrison, Jay Philips, Justin Rohrman, Ben Linders and Rajes Mathur, for their time and guidance. To the many collaborators who helped us reach testers around the world and bring forth their voices, and to our technical team for being the force behind the scenes who make this project happen!

*Until we meet again next year!*

*Lalit and Joel*

If you want to contact us with any questions, comments or insights, please feel free to contact us:

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**Joel**  
joel@practitest.com



# Collaborators

The state of testing could not have become a reality without the help of our collaborators.



[www.softwaretestingtools.com](http://www.softwaretestingtools.com)



[www.qualitytesting.info](http://www.qualitytesting.info)



[www.infoq.com](http://www.infoq.com)



[www.stephenjanaway.co.uk](http://www.stephenjanaway.co.uk)

**Quality Remarks**

[www.qualityremarks.com](http://www.qualityremarks.com)

**Hiccups**

[www.qahiccups.blogspot.co.uk](http://www.qahiccups.blogspot.co.uk)

**Testing Curator Blog**

[www.blog.testingcurator.com](http://www.blog.testingcurator.com)

**Testknight**

[www.testknight.de](http://www.testknight.de)

**Test Pappy**

[www.testpappy.wordpress.com](http://www.testpappy.wordpress.com)

**Keep Software Testing Weird**

[www.linkeshkannavelu.com](http://www.linkeshkannavelu.com)

**Ben Linders Consulting**

[www.benlinders.com](http://www.benlinders.com)

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[www.sahipro.com](http://www.sahipro.com)

**Derk-Jan de Grood**

[www.djdegrood.wordpress.com](http://www.djdegrood.wordpress.com)



[www.qualitestgroup.com](http://www.qualitestgroup.com)

**ADVENTURES IN QA**

[www.adventuresinqa.com](http://www.adventuresinqa.com)

**TEST RETREAT**

[www.testretreat.com](http://www.testretreat.com)