

# A SURVEY OF SOFTWARE TEST AUTOMATION PRACTICES IN THE INDUSTRY



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# TESTOMAT PROJECT

The Next Level of Test Automation

- “The Next Level of Test Automation”  
Increasing the development speed without sacrificing quality.
- 34 Partners (6 countries)
- October 2017 – September 2020

<https://www.testomatproject.eu/>

 <https://www.youtube.com/testomatproject>

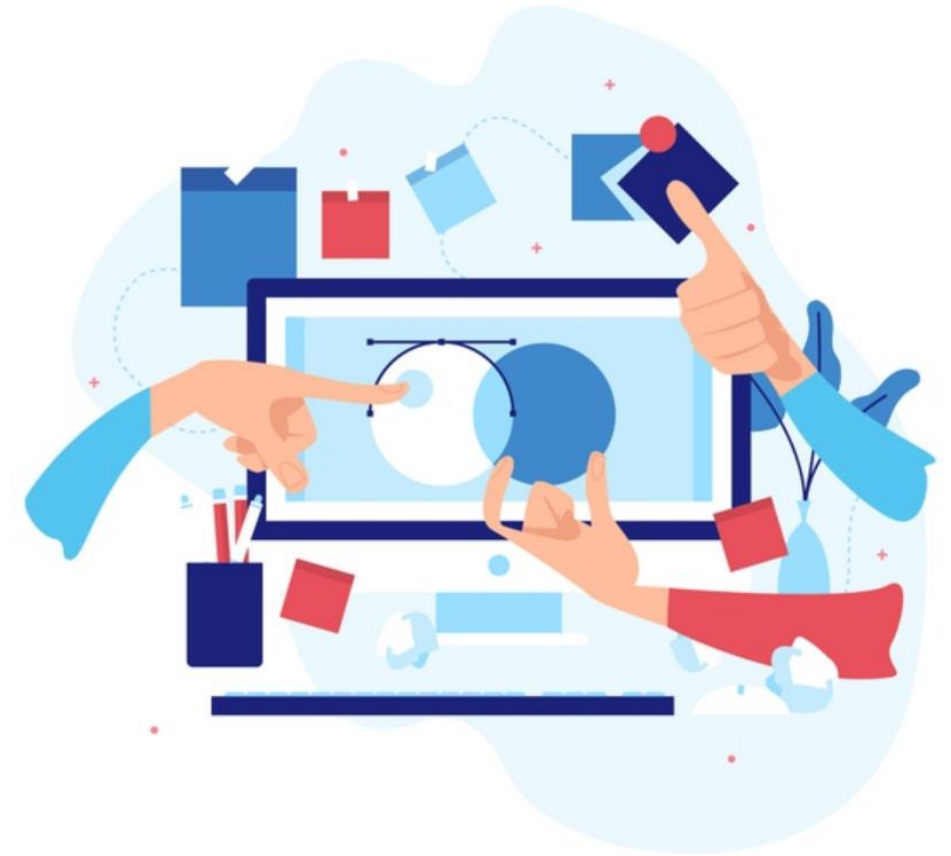
 @TestomatProject

## Consortium



# Test automation maturity

“The extent to which test automation processes are properly defined, managed, controlled, measured, and optimized for continuous development”



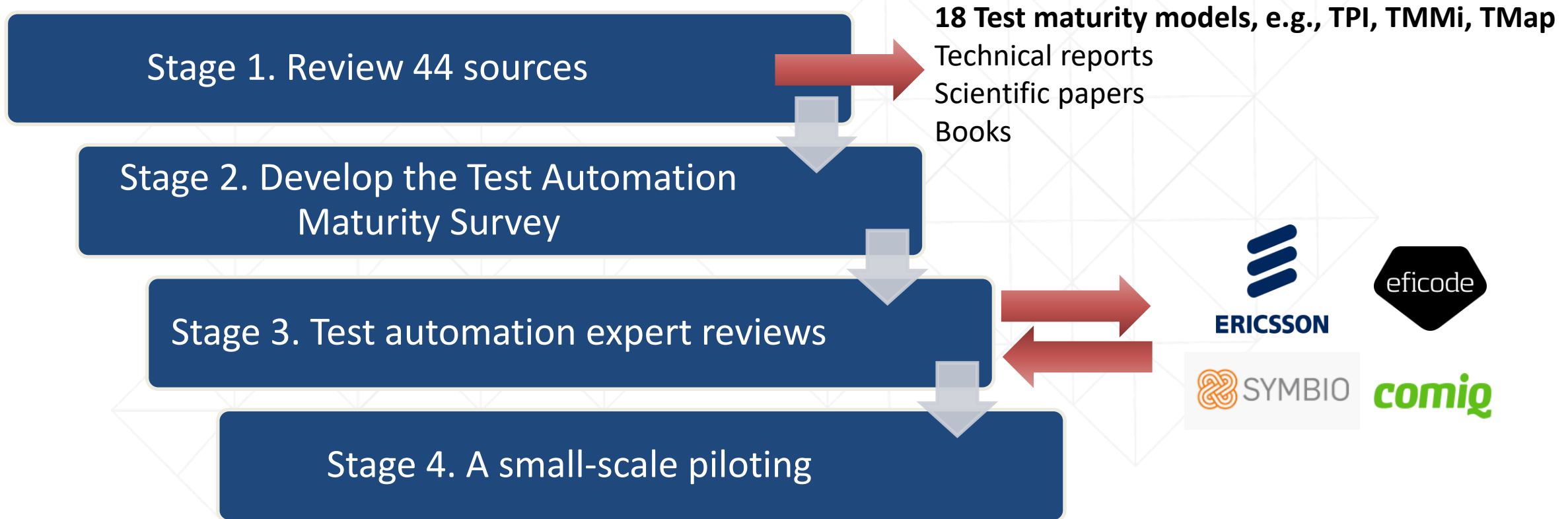
From our next paper: Wang et al. Test automation maturity assessment and process improvement: Multivocal Literature review, 2019

# Test Automation Maturity Survey

- Identify **the current trends**
- Explore **the the-start-of-art and – practices** of test automation in the industry
- Observe **the characteristics of organizations** ( more mature V.S. less mature test automation processes)



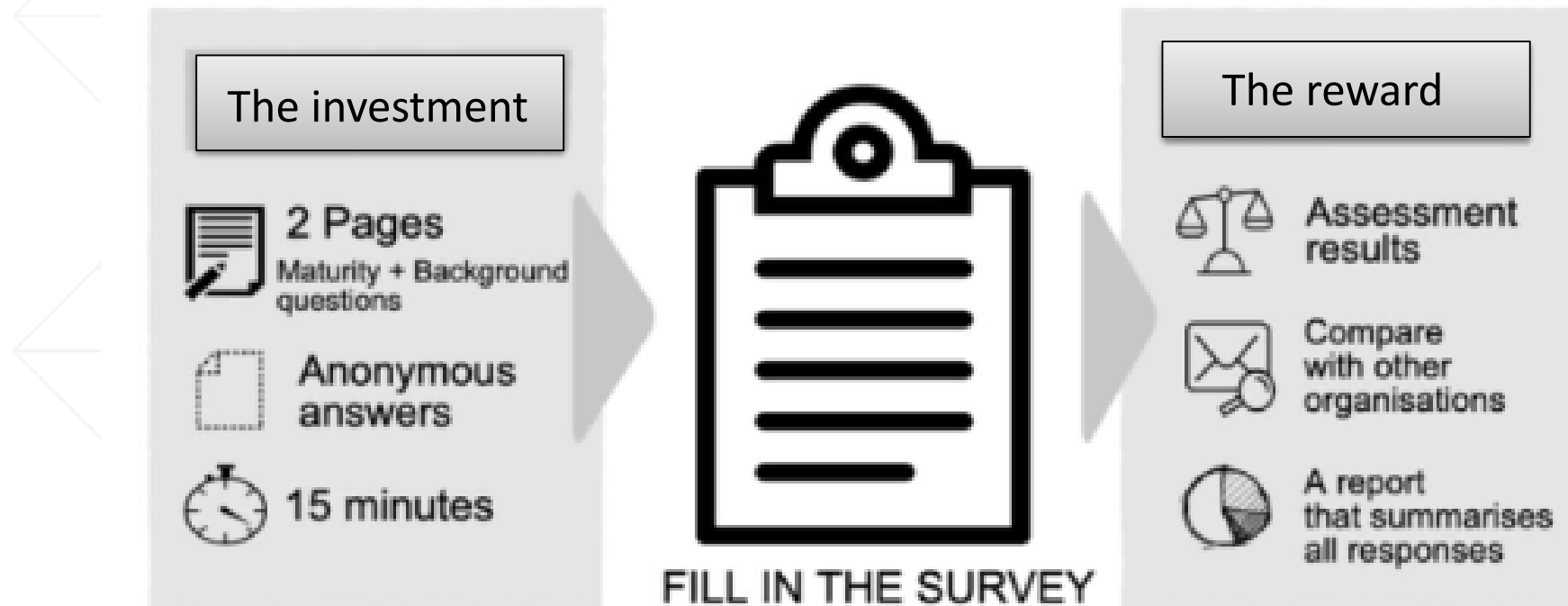
# Test Automation Maturity Survey - design



Wang, Yuqing, et al. "A self-assessment Instrument for assessing test automation maturity." *Proceedings of the Evaluation and Assessment on Software Engineering*. ACM, 2019.

# Test Automation Maturity Survey

- Online survey
- 16 maturity questions
- 10 background questions



## Test Automation Maturity questions

	Strongly Disagree - 1	Disagree - 2	Slightly Disagree - 3	Slightly Agree - 4	Agree - 5	Strongly Agree - 6	No answer
1. We have a test automation strategy that defines 'what test scope will be automated to what degree, when, by whom, by which methods, by what test tools, in what kind of environment'.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. We allocate enough resources for test automation, e.g., skilled people, the funding, the time & effort, test environment with the required software, hardware, or test data for test automation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. We clearly define roles and responsibilities of stakeholders in test automation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>



# Survey – Distribution channels

- The TESTOMAT email list
- Social media
  - LinkedIn
  - Facebook
  - Twitter
  - Reddit
- Email lists, e.g., Fistb
- Principal contact people distribute in their networks



December 2018- June 2019







**Testomat Project**  
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testomatproject.eu Joined March 2017

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### Free Test Automation Maturity Assessment Survey

**YOUR INVESTMENT**

- 2 Pages  
Maturity + Background questions
- Anonymous answers
- 15 minutes

**FILL IN THE SURVEY**

**YOUR REWARD**

- Assessment results
- Compare with other organisations
- A report that summarises all responses

This survey was developed using scientific methods.  
Respondents from 23 European companies have already participated.

<https://testomatoulu.limequery.com/66543?lang=en>



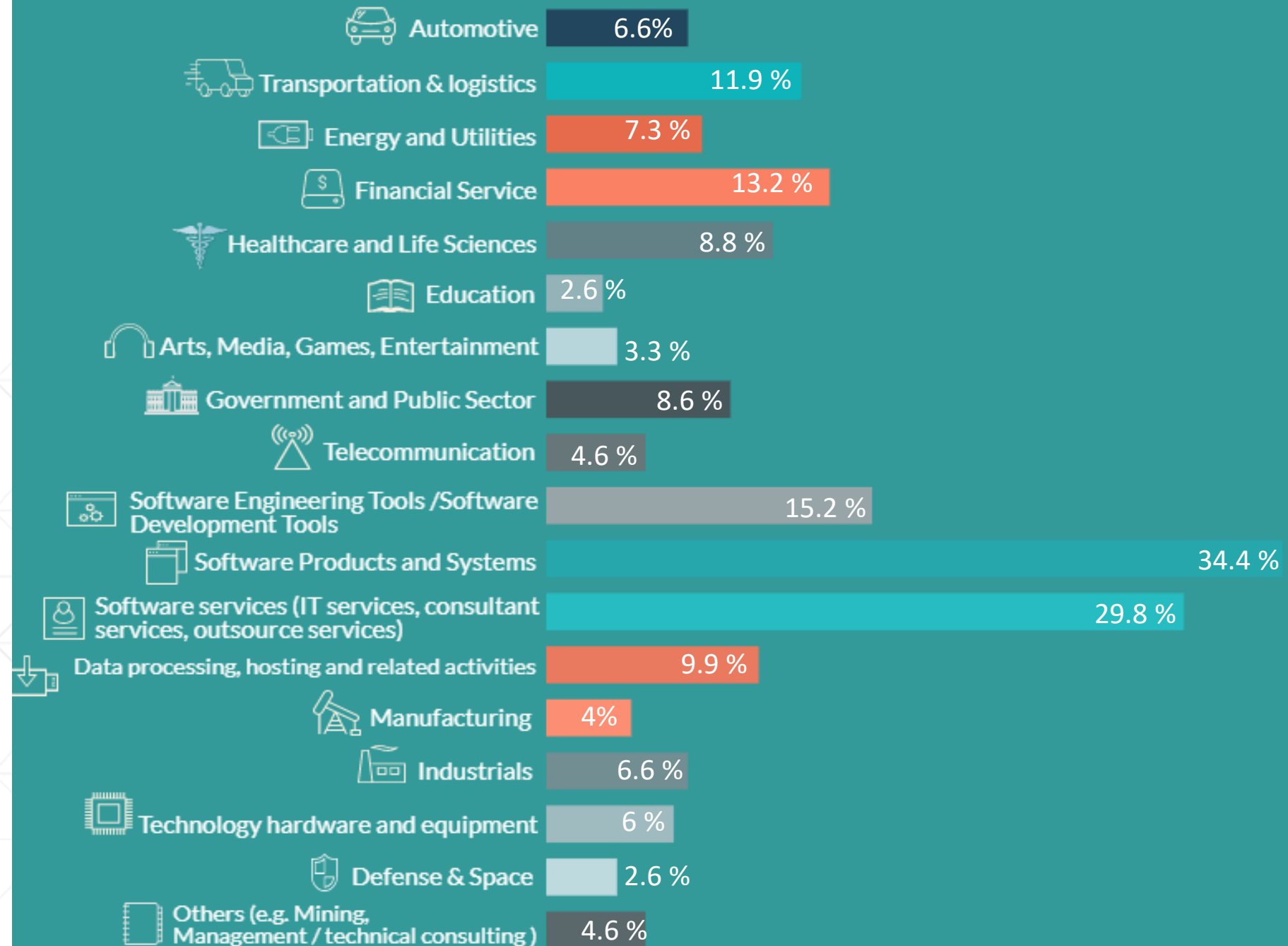
# Respondent demographic information

151 respondents from more than 101 organizations located in 25 different countries



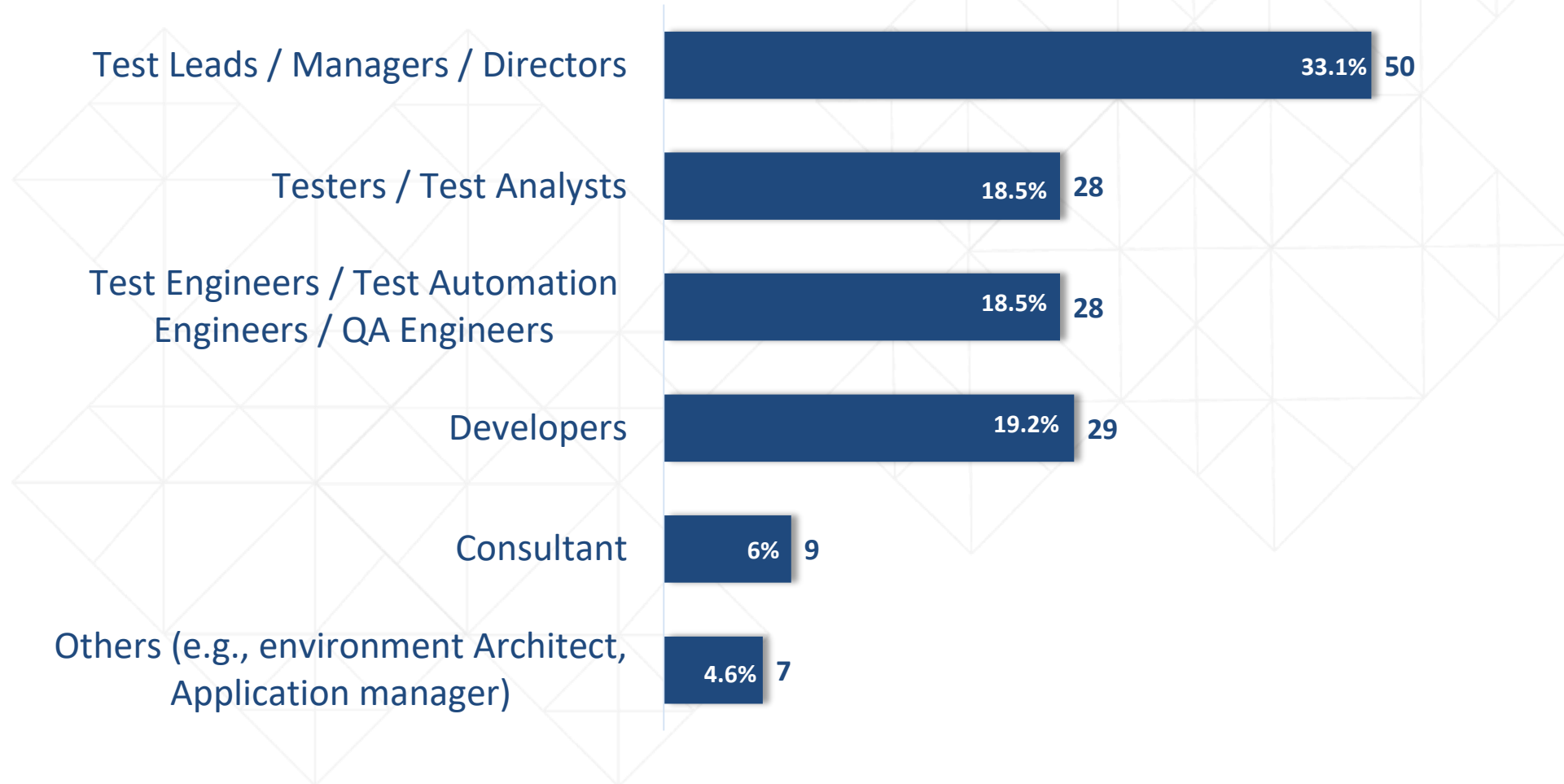
# Domain of companies

\*Note that a company can have multiple domain



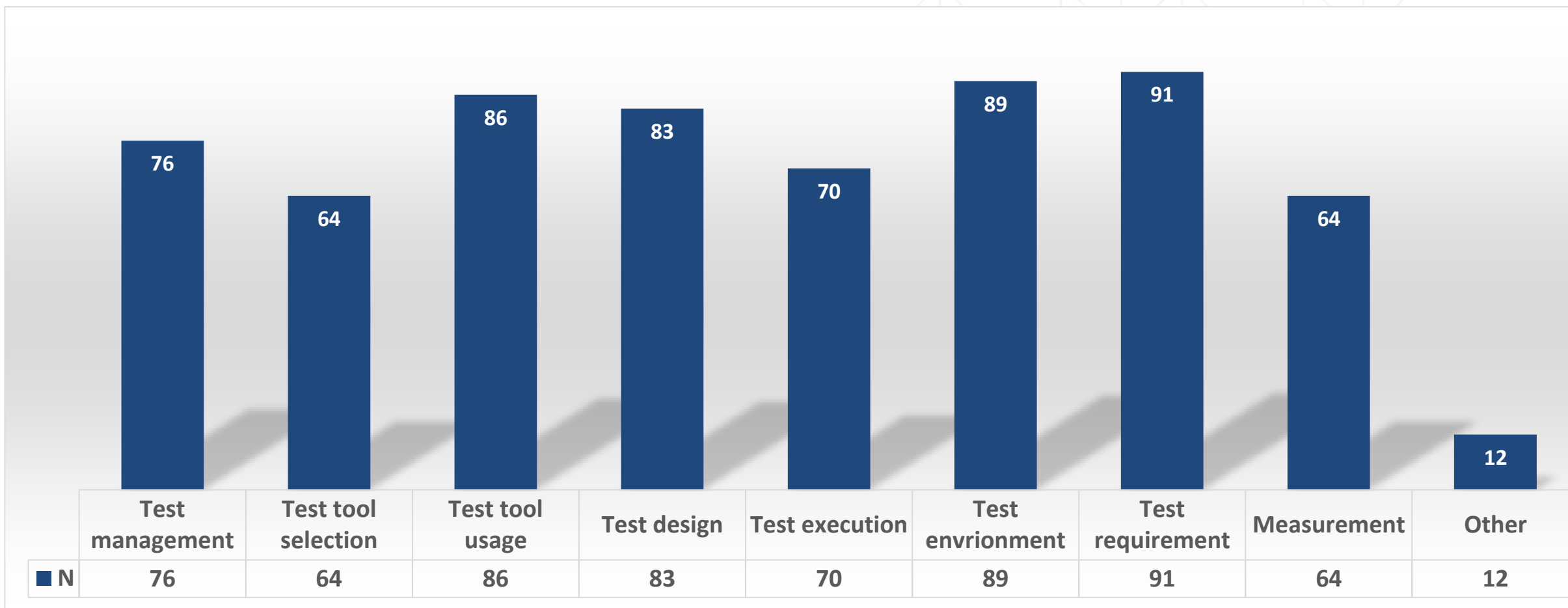
# Classification of respondents by job titles

The different job titles for test professionals



# Key process areas respondents work in test automation

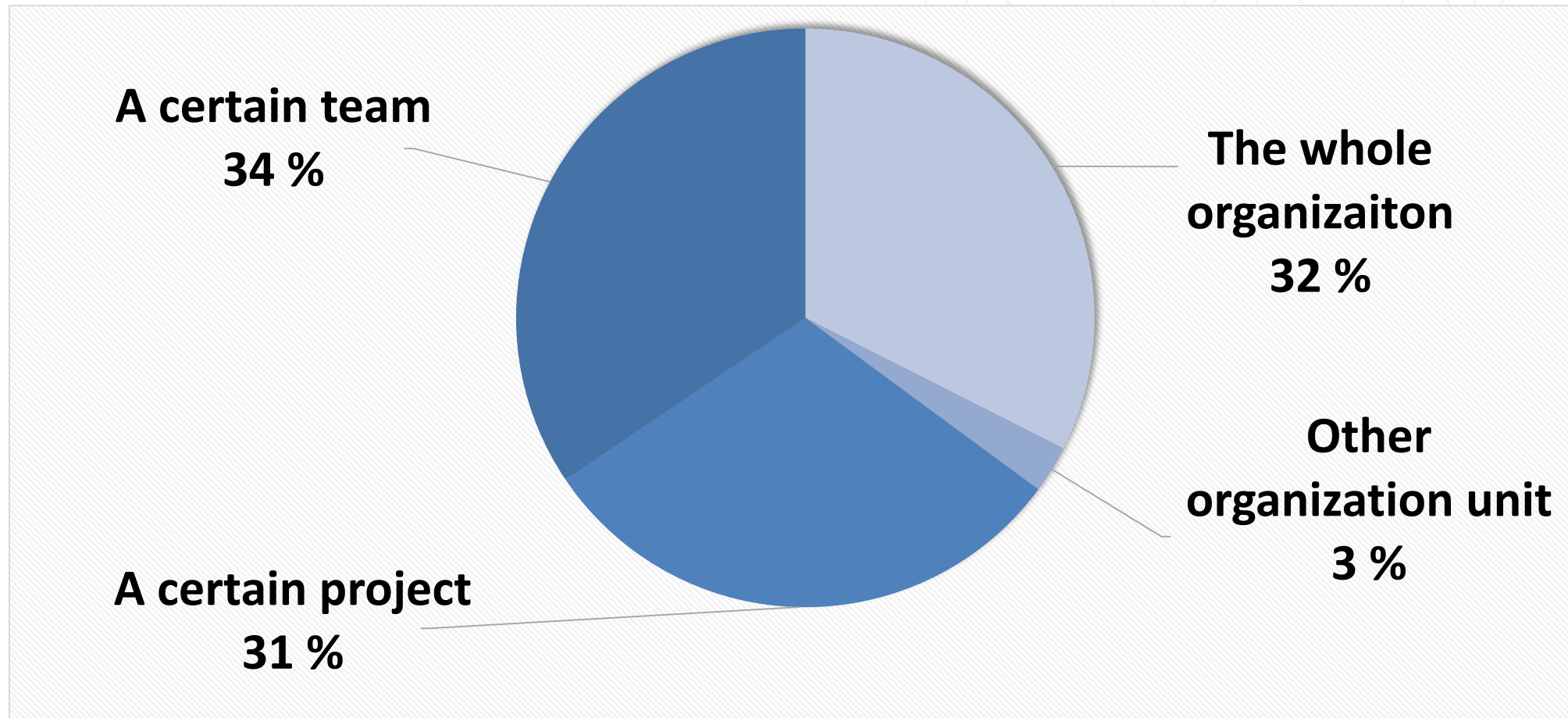
\* Note that a respondent can work in several process areas





# Current trends

# The context in where test automation happen?





# The increased size of organization unit

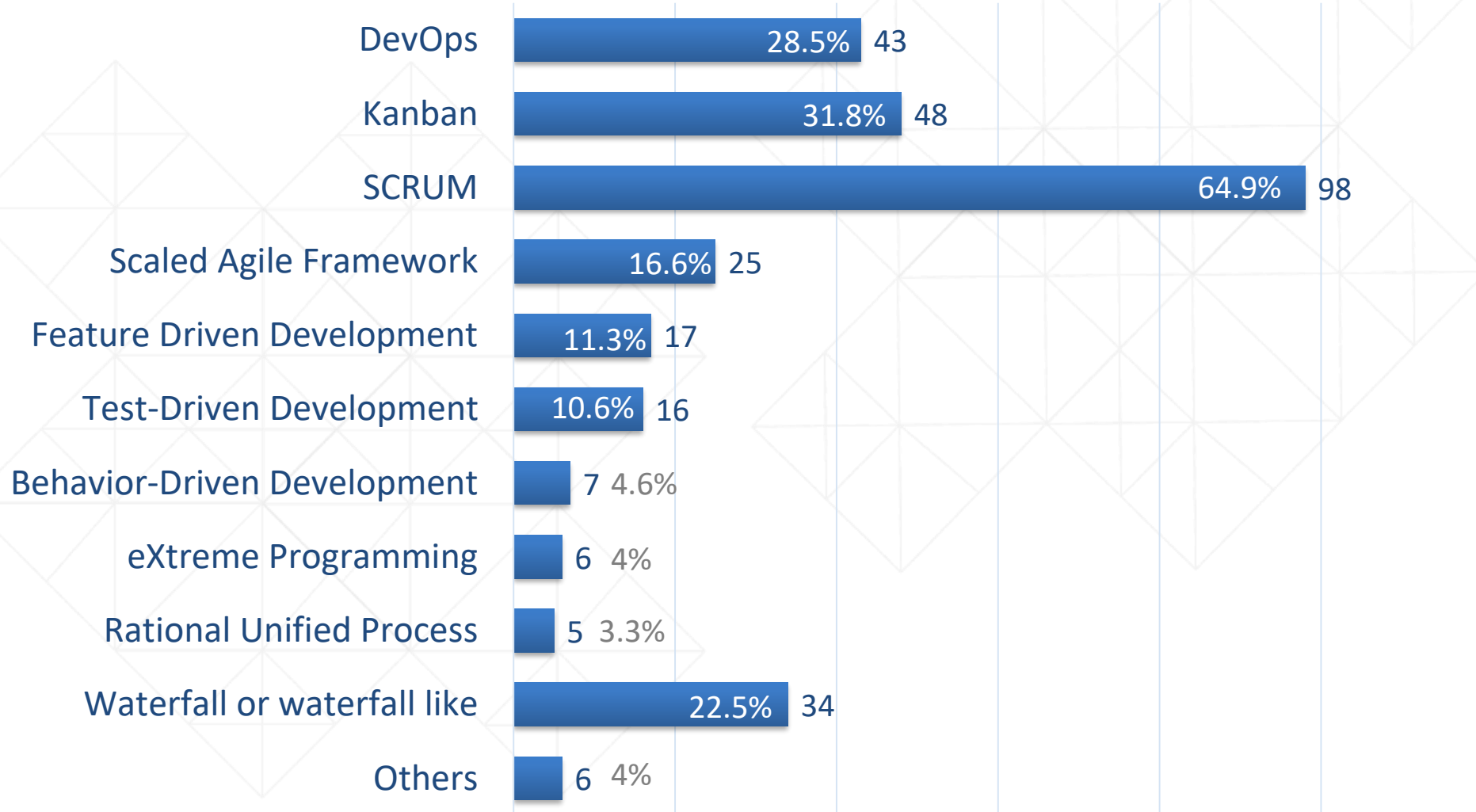
	<b>Our survey 2019</b>	<b>The State of Testing survey 2018</b> 1,500 test professionals from 80 countries <a href="https://qablog.practitest.com/state-of-testing/">https://qablog.practitest.com/state-of-testing/</a>
Micro size 1-10 employees	22.3 %	46%
Small size 11-50 employees	44.3%	43%
Medium size 51-151	14.1%	15%
Large size > 250 employees	17.5%	-

# Who conduct test automation?

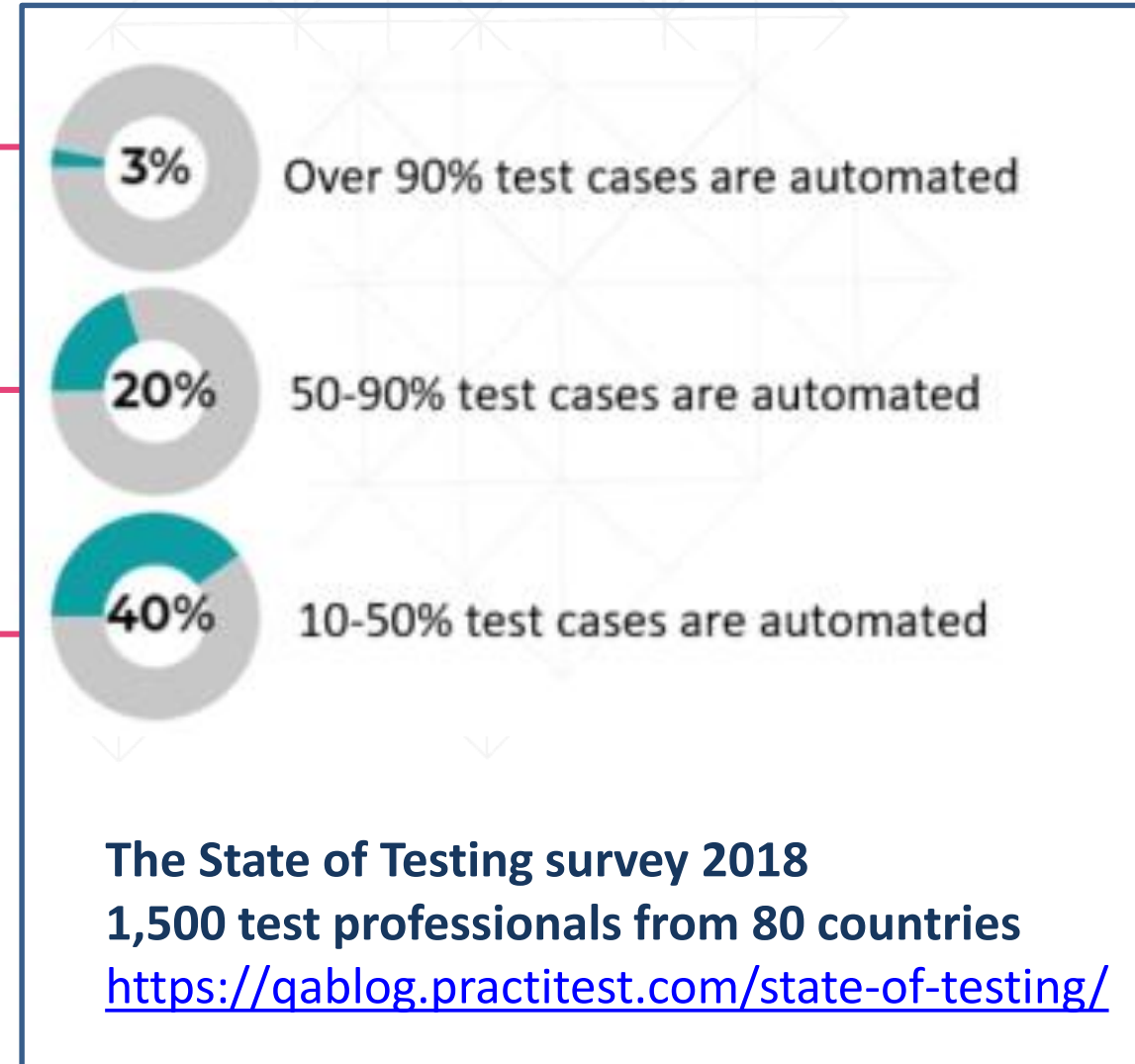
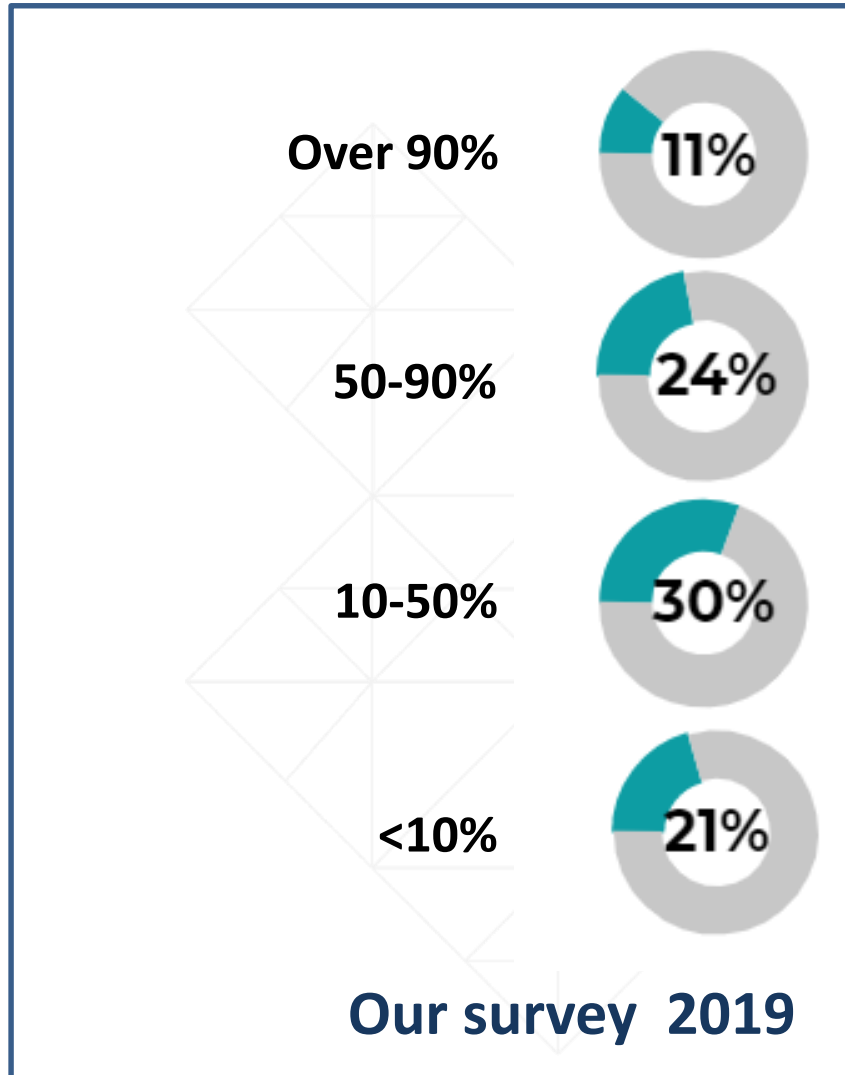


# Software development models

AGILE IS ALMOST UNIVERSAL, DEVOPS IS EXPANDING



# The increased % of automated test cases



# Test Automation the-start-of-art and –practices



# Recall,

## Answers to test automation maturity questions

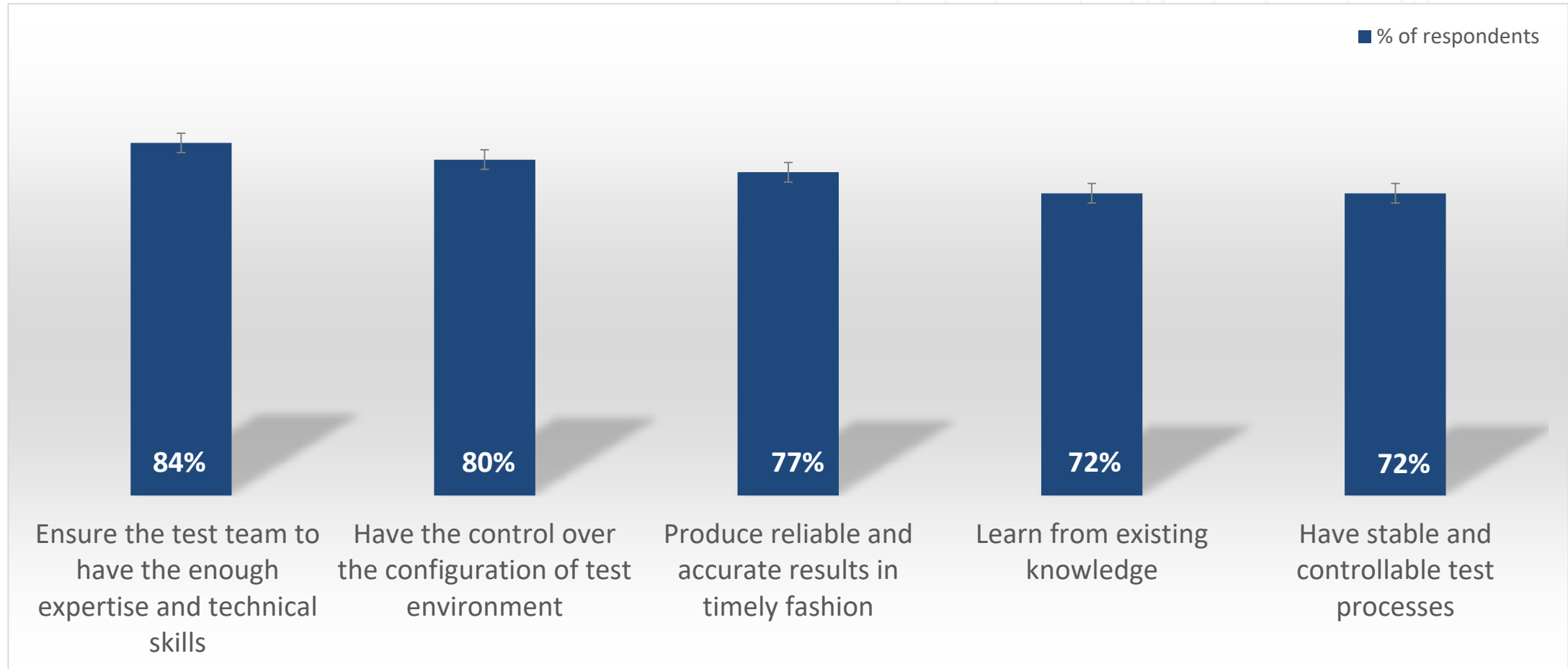
Negative – they are not doing well

Postive – they are doing well

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# The best test automation practices

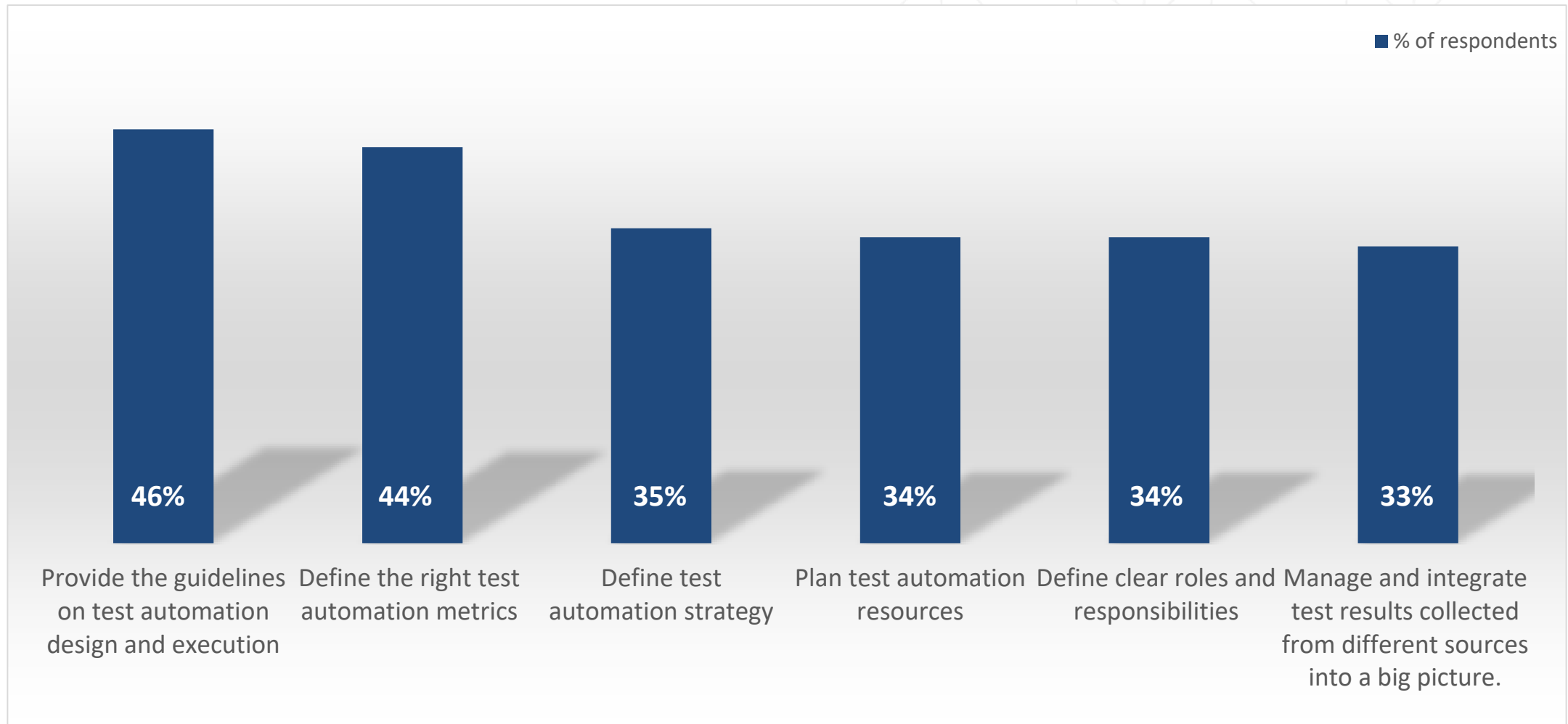
The high percentage of respondents agree that they are doing well for those test automation practices





# The challenging test automation practices

The high percentage of respondents confirm that they are not doing well for those test automation practices



# Main challenging test automation practices in recent years

Our survey 2019	The Wold quality report 2018	The Wold quality report 2017
Provide <b>the guidelines</b> on test automation design and execution	Address SUT related problems	Configure test data and test environment
Define the right <b>test automation metrics</b>	Configure test data and test environment	Have right test automation processes / methods 41%
Define <b>test automation strategy</b>	Provide enough test automation resources	Use multiple development lifecycles
Provide enough test automation <b>resources</b>	Choose right test tools	Configure the different test tools
Define the <b>clear roles and responsibilities</b>	Configure the different test tools	Provide enough test automation resources
<b>Manage and integrate test results</b> from different resources		

Source:

Compagimini, Sogeti, Microfocus, World quality quality report 2018-19, 2018

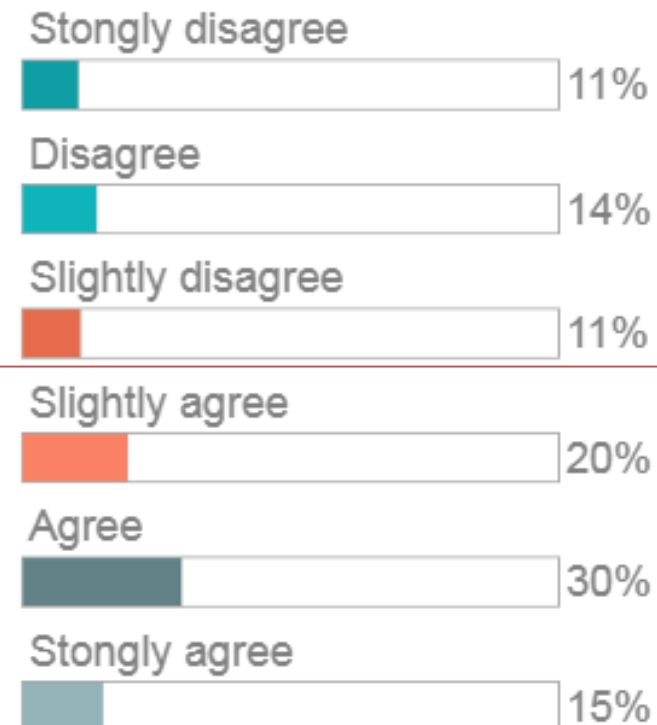
Compagimini, Sogeti, Microfocus, World quality quality report 2018-19, 2017

# The results of test automation

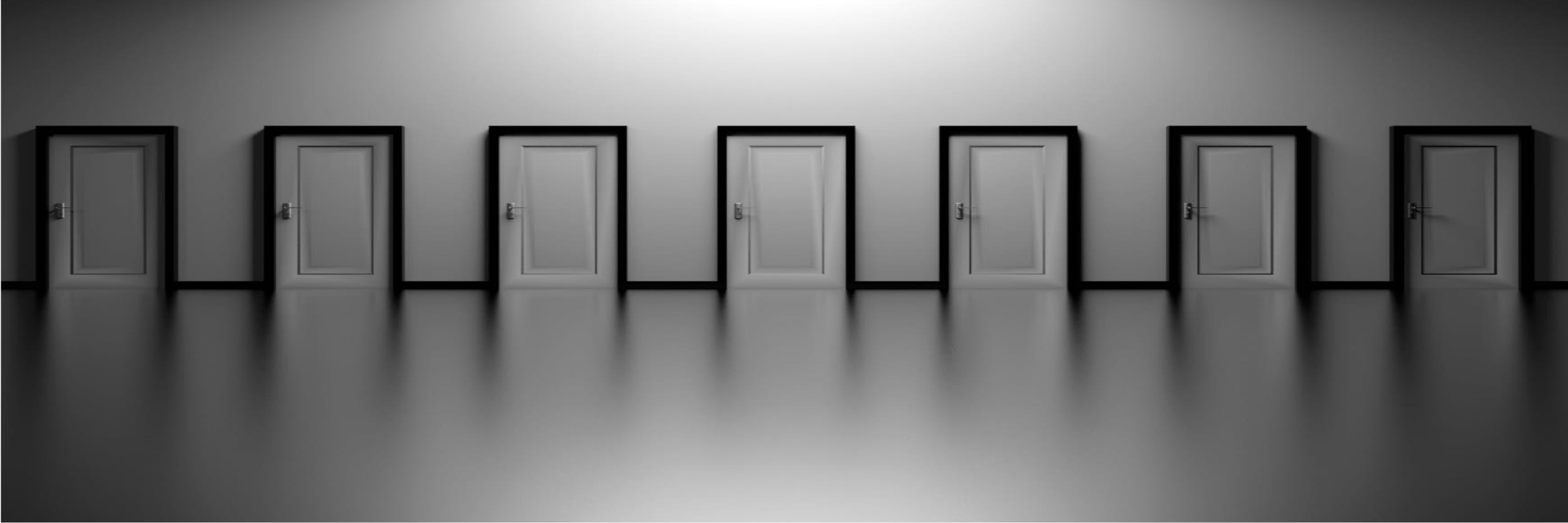
Around **65%** companies report that their test automation meet the given test purposes and bring expected benefits.

\*no matter how much or little they automate

16. Our automated tests can meet the given test purposes and consequently bring substantial benefits for us, e.g., better detection of defects, increase test coverage, reduce test cycles, good Return on Investment, better guarantee product quality .



→ **65%**



# **The characteristics of organizations mature V.S. immature test automation processes**

# Mature V.S. Immature

- Respondents answered each maturity question by using scales:

1 = strongly disagree, 2 = disagree, 3 = Slightly disagree,  
4 = Slightly agree, 5 = Agree, 6 = Strongly agree

- scales 1-6 give **1-6 points**

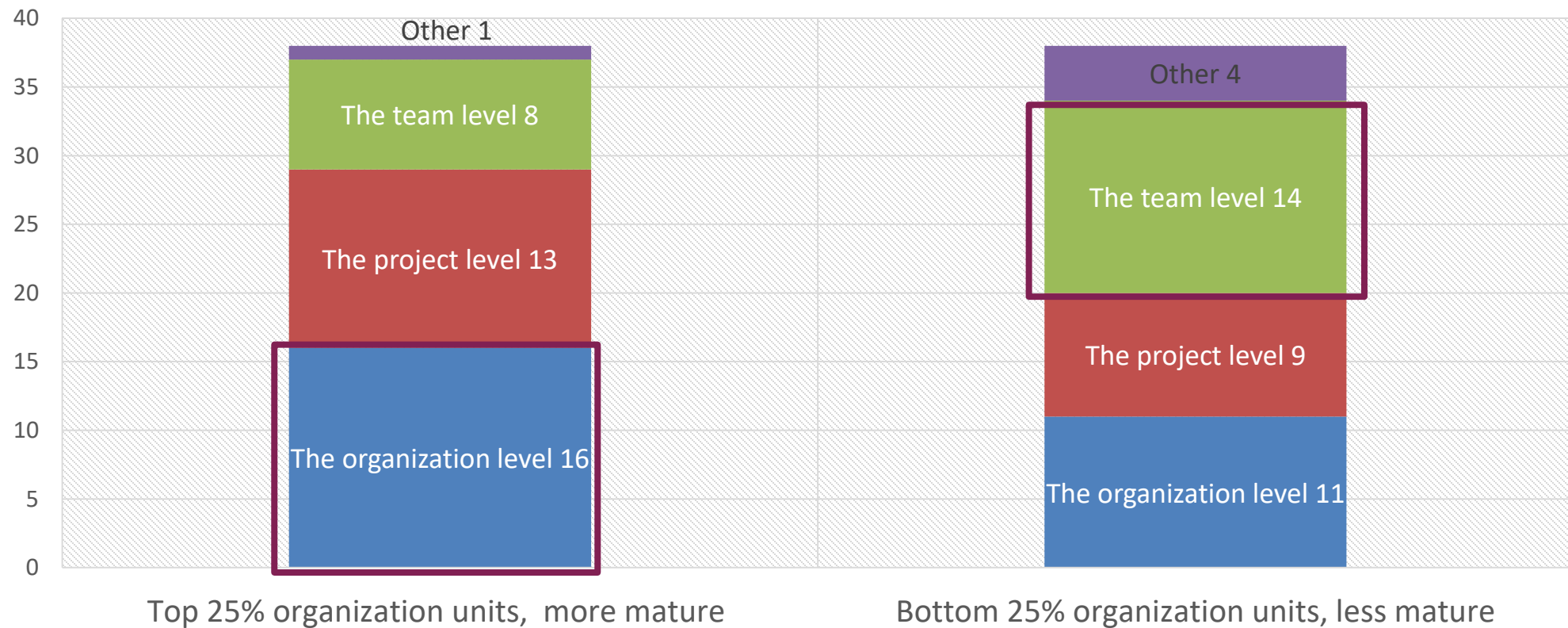
- The comparison:

## **Total points**

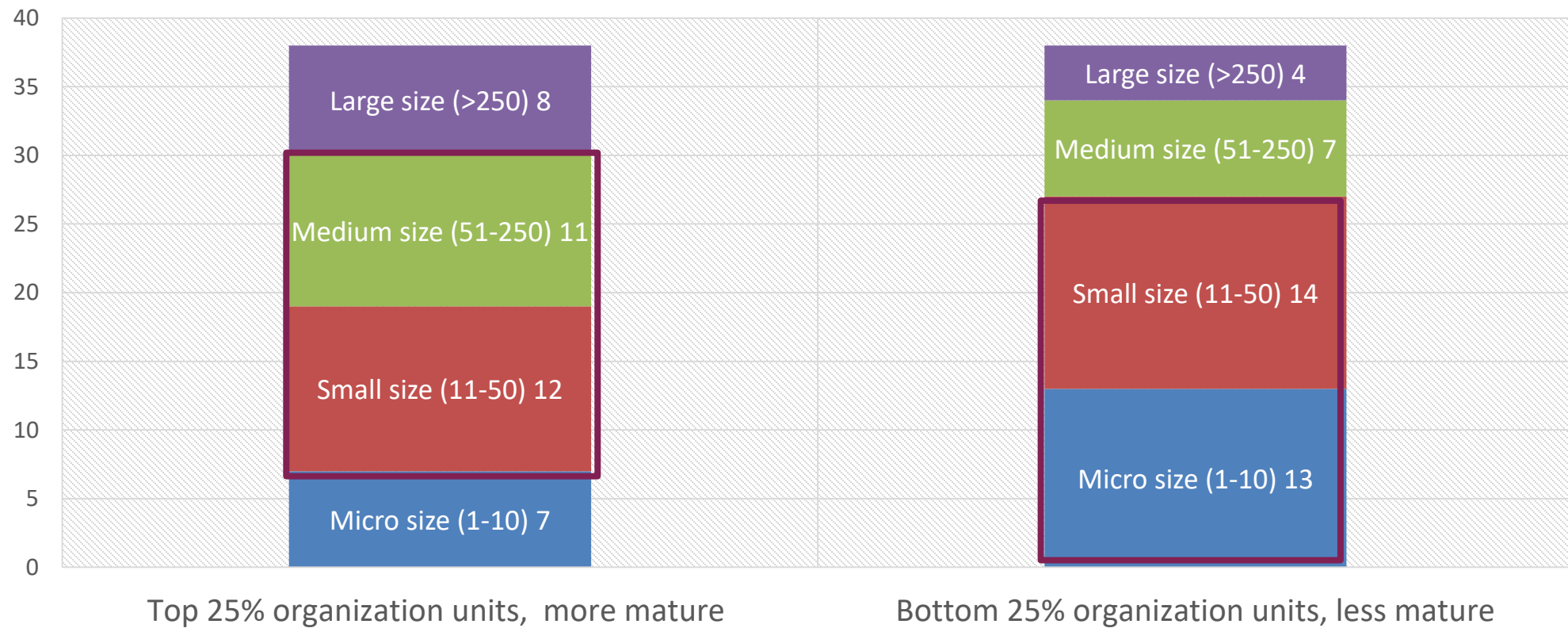
Top 25% - 38/151 organization units, **more mature** test automation process

Bottom 25% - 38/151 organization units, **less mature** test automation process

# The context to conduct test automation



# The size of organization unit





# Software development Lifecycle

	Top 25% organization units, more mature	Bottom 25% organization units, less mature
Use Agile or Agile like	97.4%	76.3%
Only use 'Waterfall or waterfall like model'	2.6%	18.4%
Only use one model	23.6%	52%
DevOps	34%	18.4%

# % of automated test cases



# Summary – Mature V.S.Immature

Characteristics	More mature	Less mature
Context	Mainly carry out <b>organization-level or project-level</b> managed test automation processes	Mainly carry out <b>team-level</b> managed test automation processes
Size	Mainly conduct test automation in <u>the small- to middle- size</u> organization units	Mainly conduct test automation in <u>the micro- to small- size</u> organization units
Software development Lifecycle (SDL)	Mostly use <b>multiple models</b> , Mostly Use ‘ <b>Agile or agile like</b> ’ <b>model(s)</b>	Mostly use <b>only one model</b> , Some purely use ‘ <b>waterfall or waterfall like</b> ’ <b>model</b>
% of automated cases	Have relatively <b>high</b> percentage of automated test cases	Have relatively <b>low</b> percentage of automated test cases


# A survey of software test automation practices in the industry

TESTOMAT project

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 [www.oulu.fi/m3s](http://www.oulu.fi/m3s)

## Questions?

<https://testomatoulu.limequery.com/66543?lang=en>

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