

With Forrester  
guest speaker:

**Diego Lo Giudice**

# Implementing **Continuous Testing** for Digital App Success

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■ October 2018

# Speakers

Special Guest Speaker



**Tal Barmeir**

CEO



**Diego Lo Giudice**

VP, Principal Analyst  
@dlogiudice



# We will cover the test automation market where Experitest was top ranked by Forrester

- ▶ Largest market presence
- ▶ Strong existing product and roadmap

Forrester Wave™: Omnichannel Functional Test Automation Tools, Q3 2018



# The future of testing: imitate intelligent human being testing



## SMART TESTING

Test like the human  
brain with AI



## VISUAL TESTING

Test like the human eye  
with layout testing



## INTUITIVE TESTING

Test using human logic  
with codeless  
automation testing

# Agenda

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- 01** Continuous and smarter testing trends 25 min
- 02** Ensuring customer experience with visual testing 10 min
- 03** Test creation simplicity with codeless automation 10 min
- 04** A continuous testing case study 5 min
- 05** Summary & Q&A 10 min

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# Continuous and smart testing trends

**Diego Lo Giudice**, Vice President, Principal Analyst  
@dlogiudice

October 9, 2018














We work with business and technology leaders to develop customer-obsessed strategies that drive growth.



# Digital leaders are obsessed about CX

## The Revenue Impact Of Improving Each Industry's Average CX Index Score By One Point

*Make A Modern Business Case For Agile And DevOps-Driven Digital Transformation*

		A one-point improvement in CX Index™ score results in:			
		Annual incremental revenue per customer*	x	Average number of customers per company†	= Total revenue
	Auto manufacturers: mass market	\$48.50	x	18 million	= \$873 million
	Hotels: upscale	\$7.54	x	44 million	= \$332 million
	Wireless service providers	\$3.39	x	82 million	= \$278 million
	Big-box retailers	\$2.44	x	100 million	= \$244 million
	Auto and home insurance providers	\$14.32	x	15 million	= \$215 million
	Airlines	\$3.49	x	48 million	= \$168 million
	Traditional retail banks	\$8.27	x	15 million	= \$124 million
	TV service providers	\$6.11	x	17 million	= \$104 million
	Internet service providers	\$5.26	x	16 million	= \$84 million
	Rental car providers	\$1.67	x	40 million	= \$67 million
	Auto manufacturers: luxury	\$104.16	x	350,000	= \$36 million
	Direct banks	\$9.96	x	3 million	= \$30 million
	Credit card providers	\$0.08	x	61 million	= \$5 million

Base: 122,500 US online adult customers (ages 18+) of at least one industry who interacted with that industry within the past 12 months (bases vary by industry)

Source: Forrester Data Customer Experience Index Online Survey, US Consumers 2016

\*This analysis shows the effect on revenue potential of increasing CX Index scores by one point from the average CX Index score of the largest brands in the industry. Curves for individual brands differ from this industry curve. For brands that don't have a linear relationship between CX and revenue, the revenue effect of improving CX by one point will vary greatly depending on the CX Index score that serves as the starting point for this analysis.

†The number of customers represents that of a big player in the industry based on inputs that include Forrester Data Consumer Technographics® data, Forrester's analysts, and publicly available industry data.



# UX is still largely influenced by what clients see...



<https://www.linkedin.com/pulse/your-employees-seeing-bigger-picture-anand-raj-markandu/>

**With AI, UX is also becoming an experience based on quality of hearing and voice...**



# Customer-obsessed DNA

**FROM**

**TO**

Customer aware

Customer led

Data rich

Insights driven

Perfect

Fast

Siloed

Connected



While Speed Matters...





It cannot come without quality...



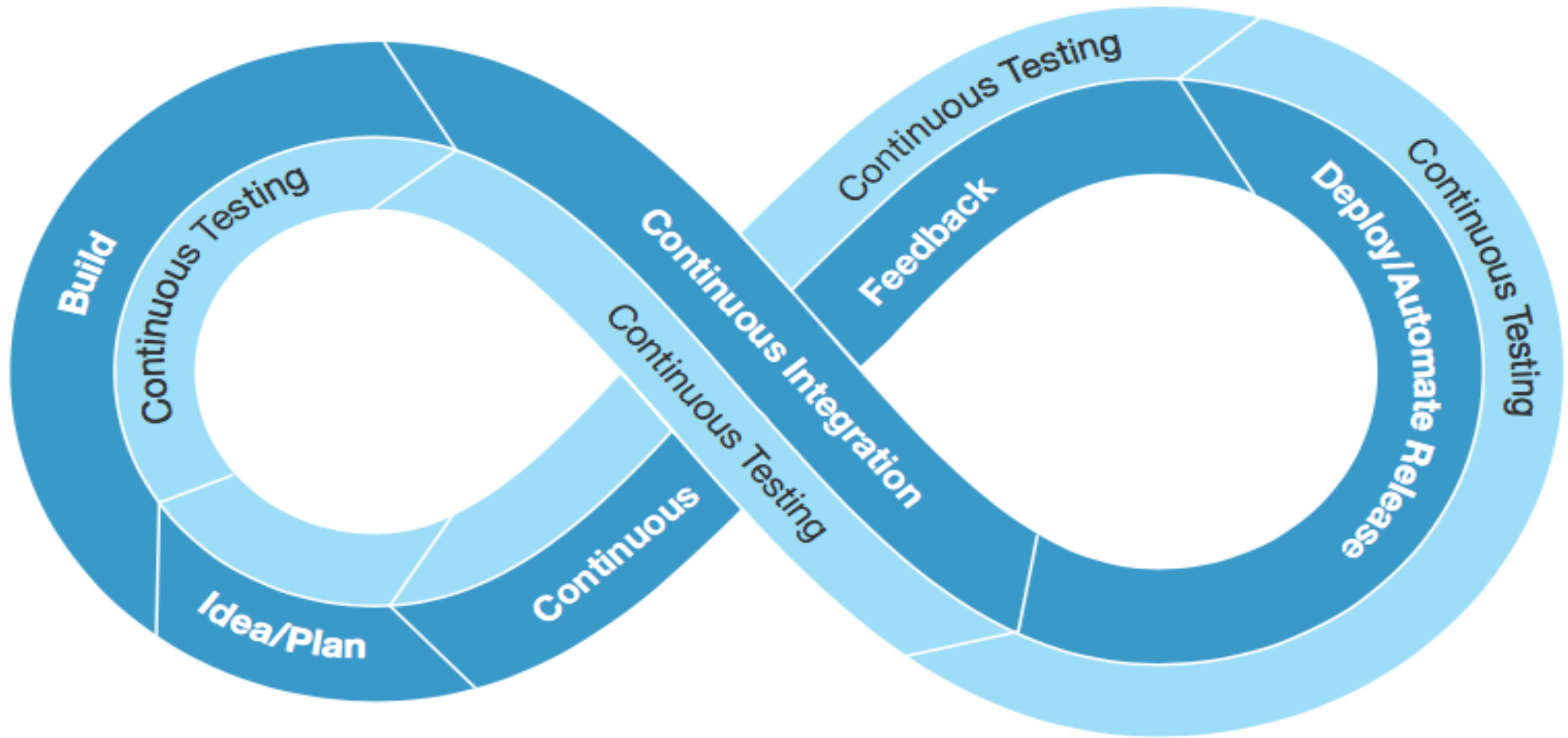
**Testing is at the heart of this revolution, so how do we test ....**

**›Great CX**

**›Great Quality...**

**›...And all at Great Speed ?**

# Continuous Testing



Source Forrester: Vendor Landscape: Continuous Testing Services For Agile And DevOps Environments

# Continuous Testing, what is it?

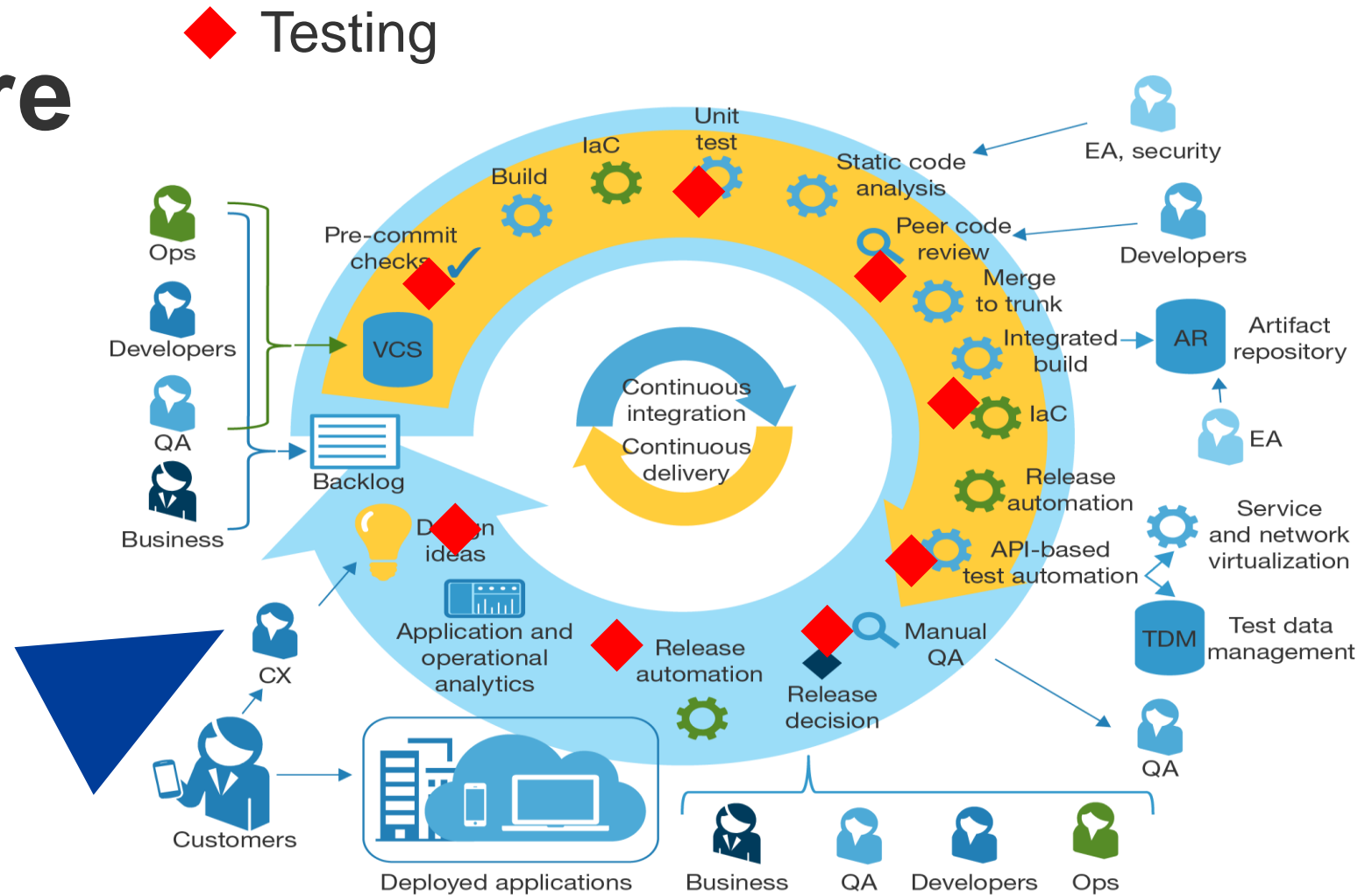
- › Enables quality@speed software delivery continuously (In CI/CD Pipelines). Where:
  - All testing activities are run continuously in an integrated fashion with development and delivery
  - Testing shifts left in the SDLC
  - Code is verified on the go
  - Immediate bug fixing enabled
  - Test environments are provisioned instantly
  - Unit, functional and nonfunctional tests are run in an automated way
  - Orchestrated by continuous integration and continuous delivery tools.



## The Complex Application Delivery Pipeline Tool Chain

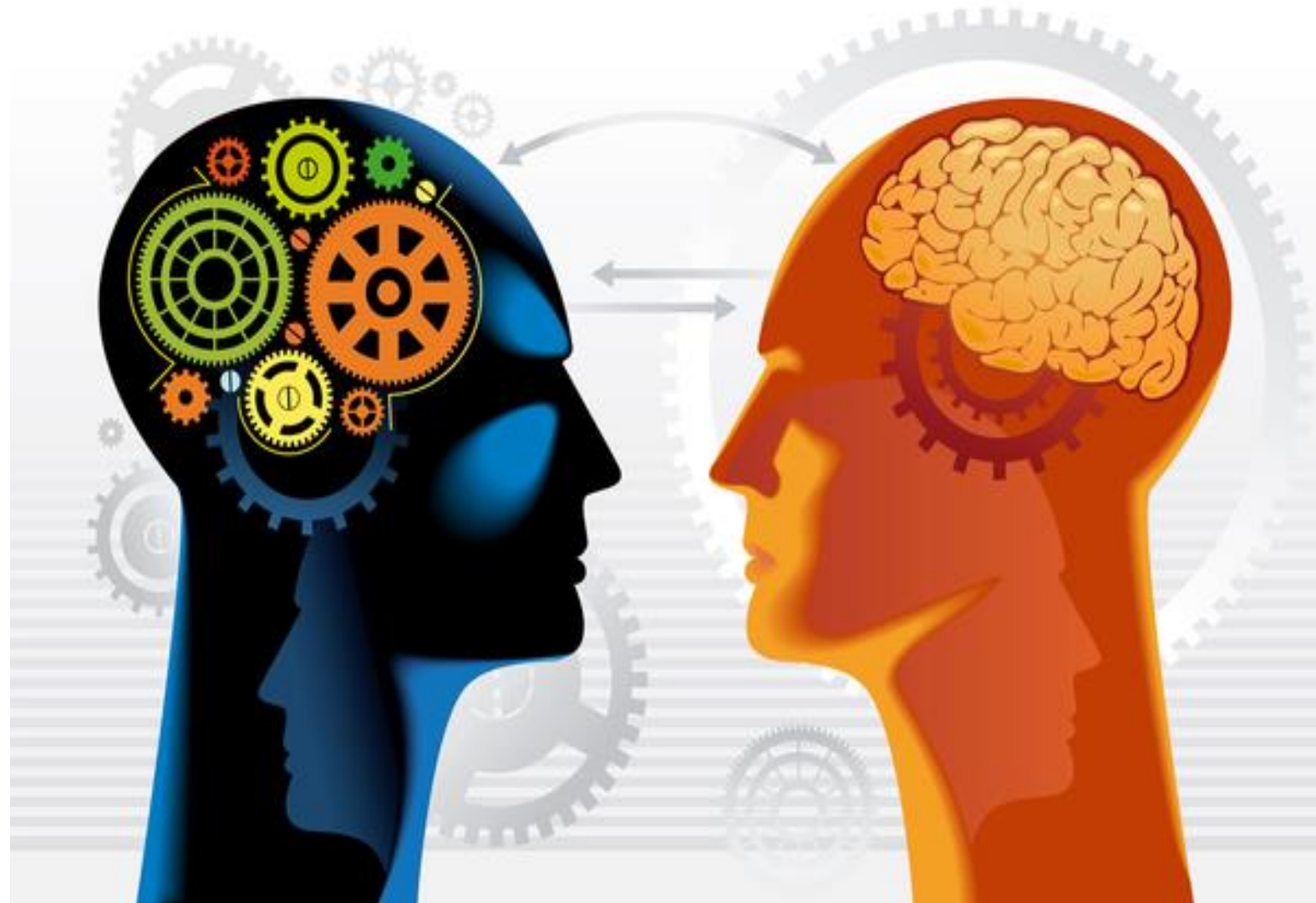
*The Quest For Speed-Plus-Quality Drives Agile And DevOps Tool Selection*

Automation requirements are paramount in CI/CD: But can we eliminate more manual? Like UAT?



# How about Augmenting Testing persona ?

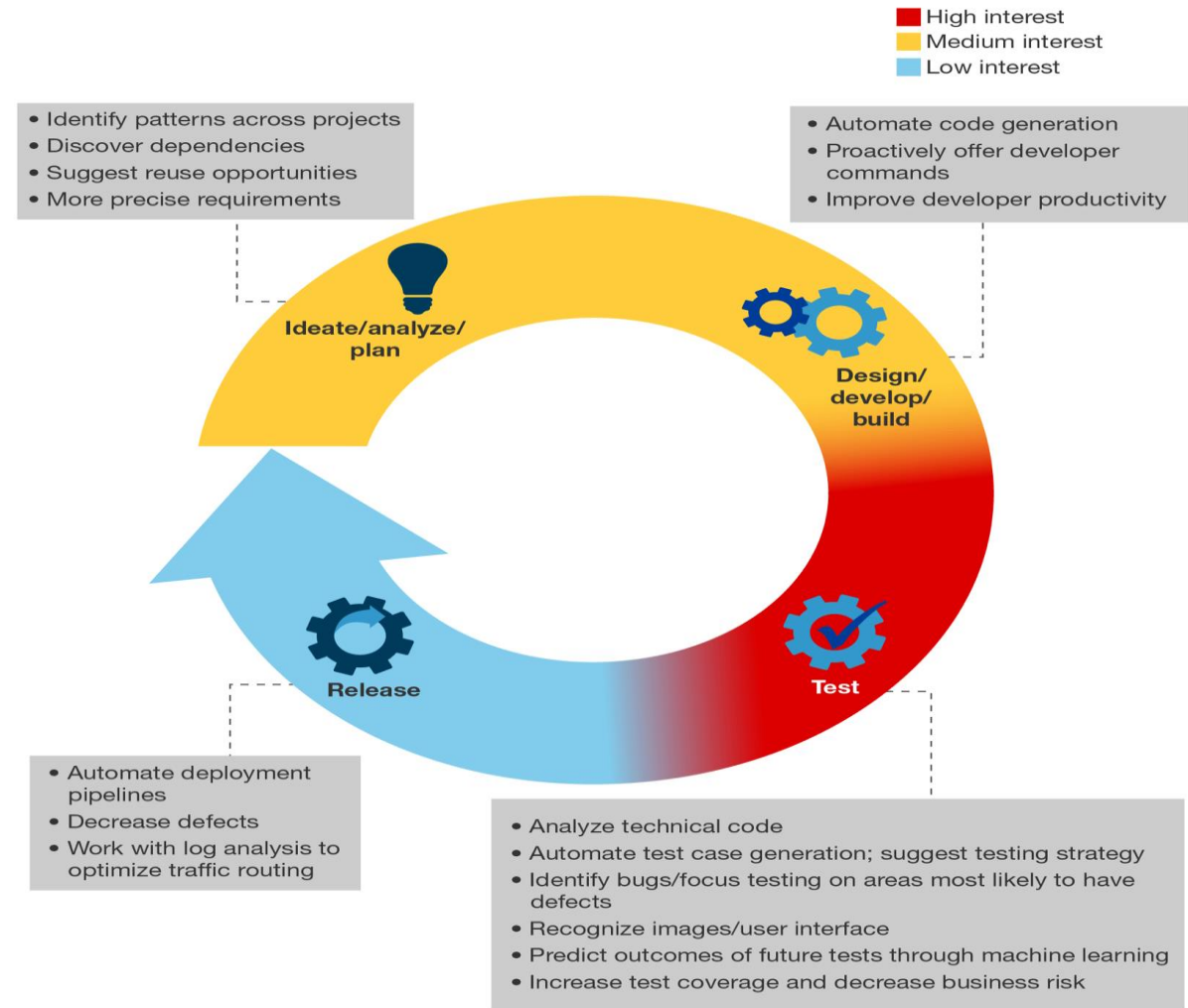
**Business**  
**Technical**  
**Developers**



# Many think AI can help in testing...

## AI Will Improve The Software Development Life Cycle, Starting With Testing

How AI Will Change Software Development And Applications



# Is AI becoming more popular for improving testing !?

Which of the following statements reflect your development team's approach to using AI and Machine Learning techniques in software testing.

<b>We don't use any AI and machine learning to test better and faster</b>	<b>23%</b>
<b>We use AI and Machine Learning to test better and faster to increase quality</b>	<b>37%</b>
<b>We plan to use AI and machine learning to test better and faster but don't use any currently</b>	<b>26%</b>
<b>We don't plan to use any AI or Machine learning to test better and faster.</b>	<b>13%</b>

Source : Forrester Research Business Technographics Developer Survey, 2018  
US, EMEA, APAC Total Sample Size: N=3,228

# Most common use cases is “incidents prevention” and test management – data crunching.

Which of the following describes the approach you are taking in using AI and Machine Learning for software testing?

<b>We use AI and machine learning algorithms to optimize our overall test management process</b>	<b>41%</b>
<b>We use AI and machine learning algorithms to prevent incidents in production</b>	<b>61%</b>
<b>We use AI and machine learning to augment testers capabilities during their testing process</b>	<b>50%</b>
<b>We use AI and machine learning algorithms to improve and increase test automation</b>	<b>26%</b>
<b>We use AI and ML for testing AI solutions</b>	<b>10%</b>
<b>Other (please specify)</b>	<b>0%</b>

Source : Forrester Research Business Technographics Developer Survey, 2018  
US, EMEA, APAC Total Sample Size: N=3,228

# AI and Deep Neural Networks gaining traction for image recognition.... !





# Visual Testing leverages AI technologies (DL)

- › A Visual testing tool can do what a human can visually do:
  - Recognise images, videos and text.
  - Capture differences that a human eye can't.
- › Supports humans in doing a better job in deciding what's really right and what is really wrong in User Interfaces.
- › Visual testing enables automated testing and validation of UI consistency and improved experience. Mandatory for testing
  - In continuous delivery.
  - Across multiple heterogeneous devices, iOS and browsers.

# Visual Testing is emerging to augment and automate more...

Speeds UI changes during  
Front end development

Automates and Augments  
UI Consistency and  
Experience



# In a glance for AI in testing it's still early days....

- › Most all testing GSIs, and consulting organizations initial focus has been on leveraging machine learning and predictive algorithms
- › Some existing testing tool vendors and new startups are bringing more AI and ML in testing
- › Some experimentations leverage NLP sub-categories, some Deep Learning most Machine Learning (Statistical-bayesian, predictive)
- › Testing Use cases: there are myths and realities !
- › But the path to autonomous testing is like self driving cars, long time away.....

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**Diego Lo Giudice**  
**dlogiudice@forrester.com**

**Thank you**

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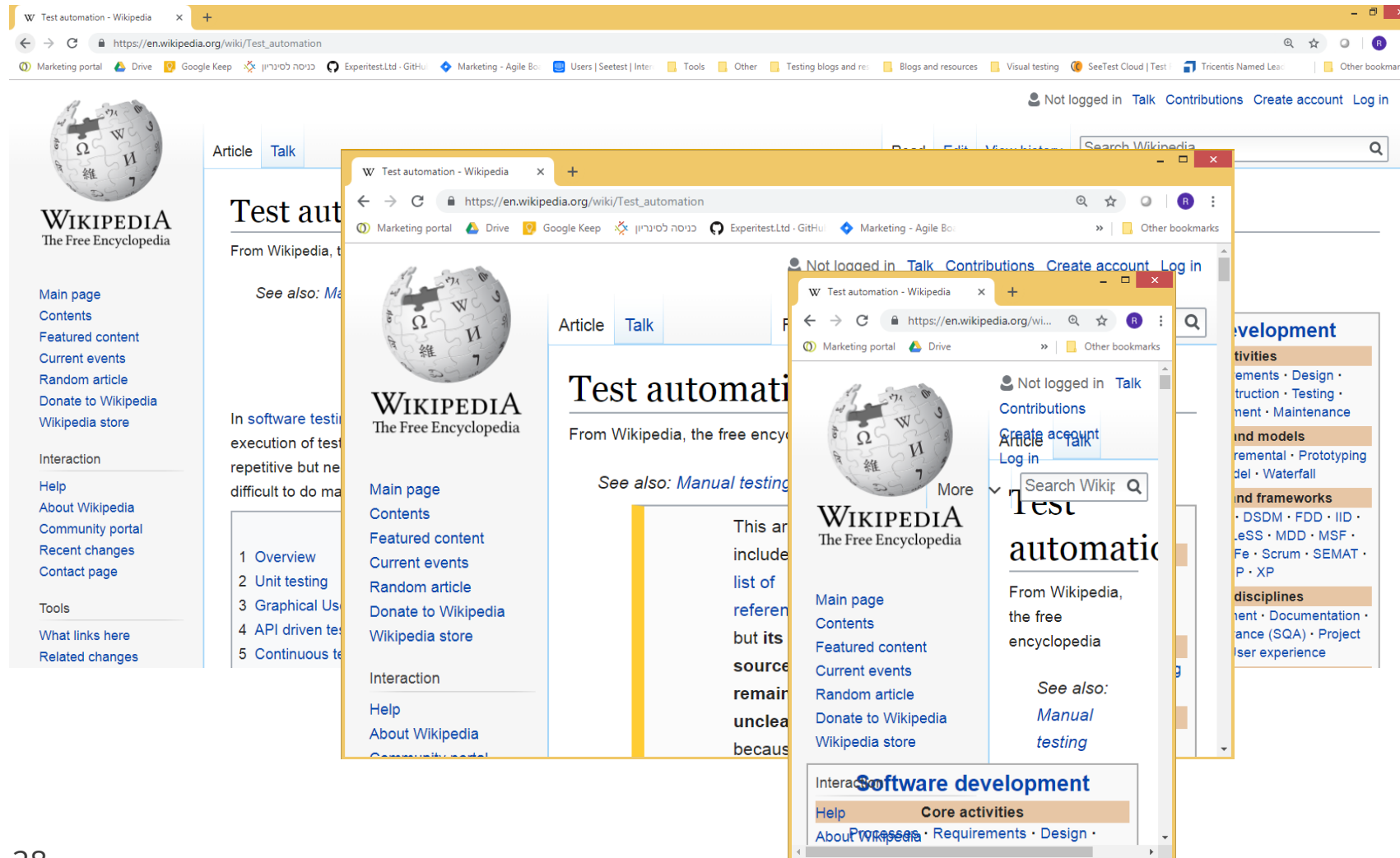
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**05** Summary & Q&A 10 min

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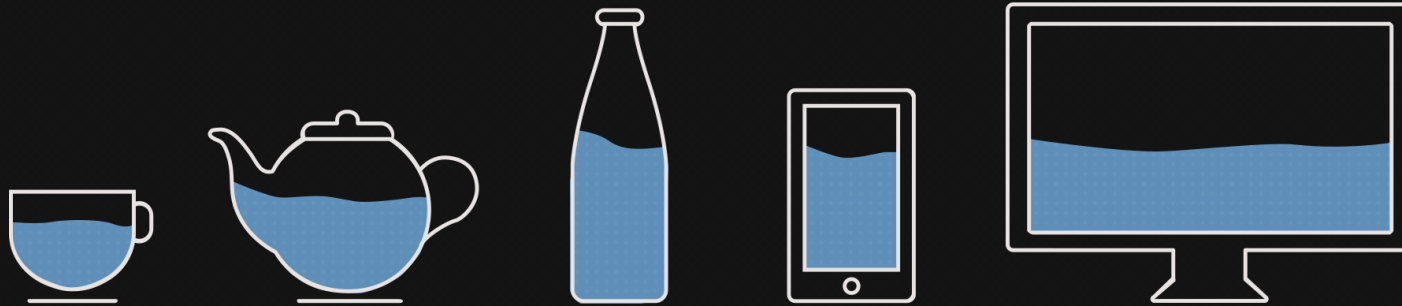
# What is visual testing?

Test that things are laid out on the screen the way they should



# Responsive Web Design makes this a big issue

## CONTENT IS LIKE WATER

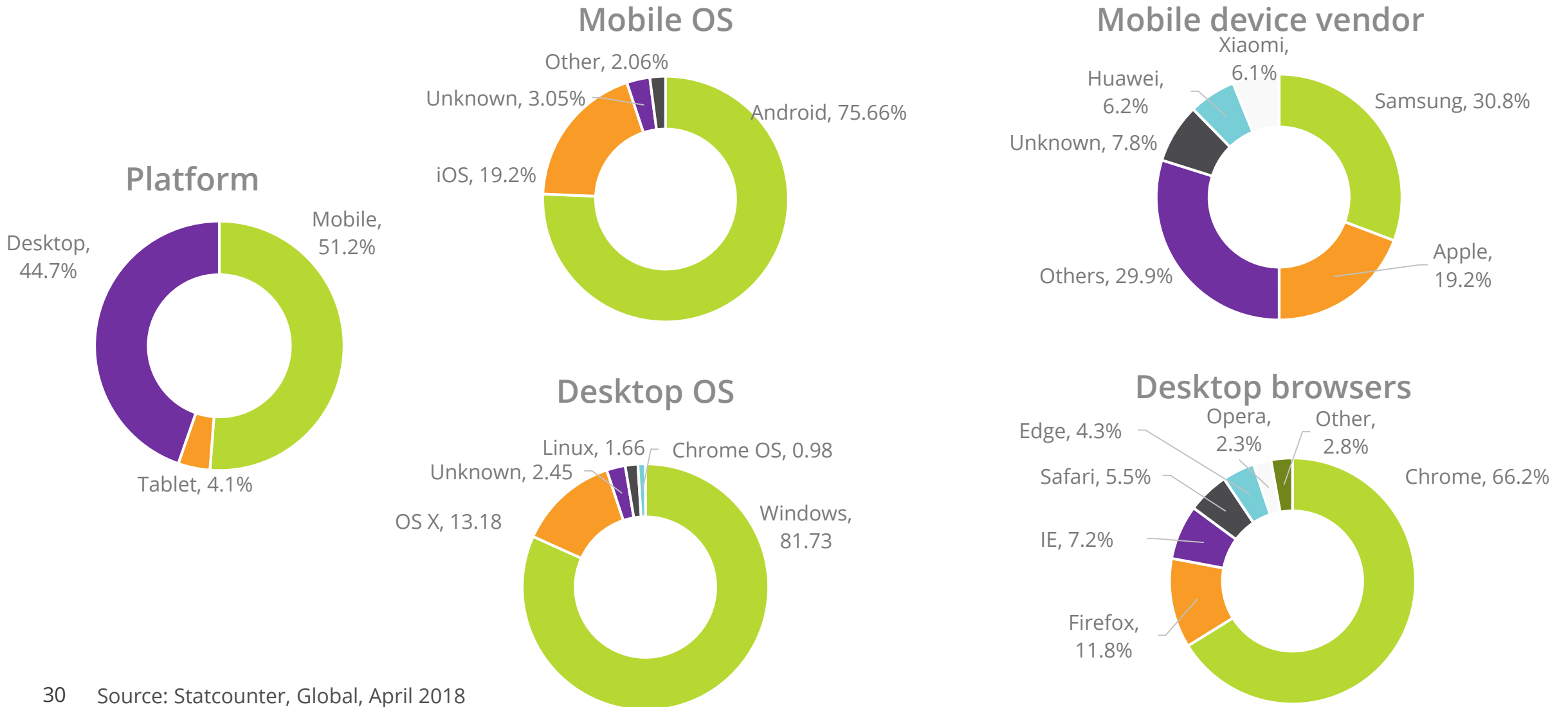


“ You put water into a cup it becomes **the cup**.  
You put water into a bottle it becomes **the bottle**.  
You put it in a teapot, it becomes **the teapot**. ”

Josh Clark (*originally Bruce Lee*) - Seven deadly mobile myths

Illustration by Stéphanie Walter

# A huge testing matrix: digital platform segmentation growing



## 2 innovative solutions:

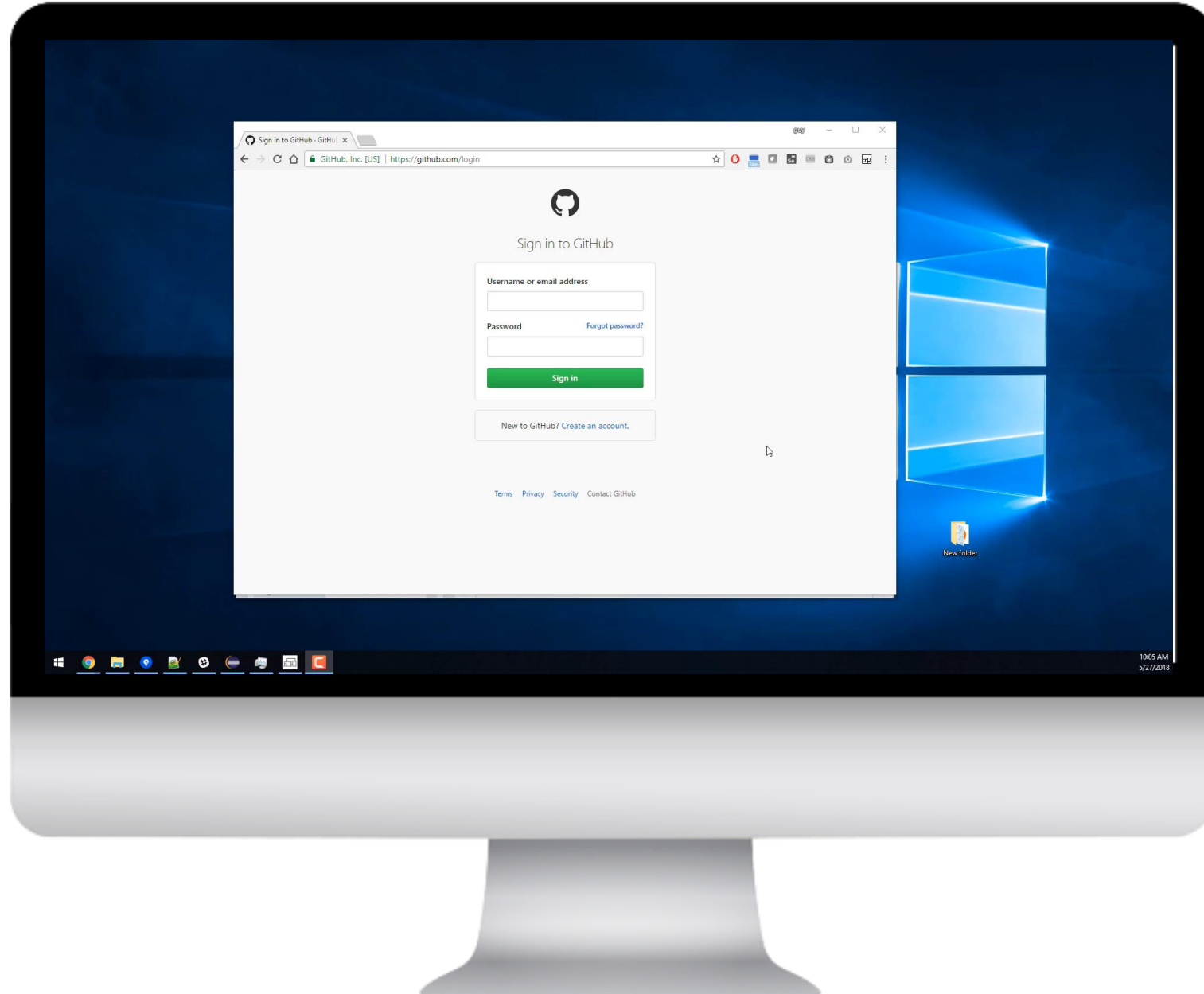
### Automated visual testing



### Manual visual testing with Follow-Me



# Visual testing – video demo





# Automated Visual Testing

Automatically verify design guidelines to ensure visual consistency



Quick & easy  
test creation



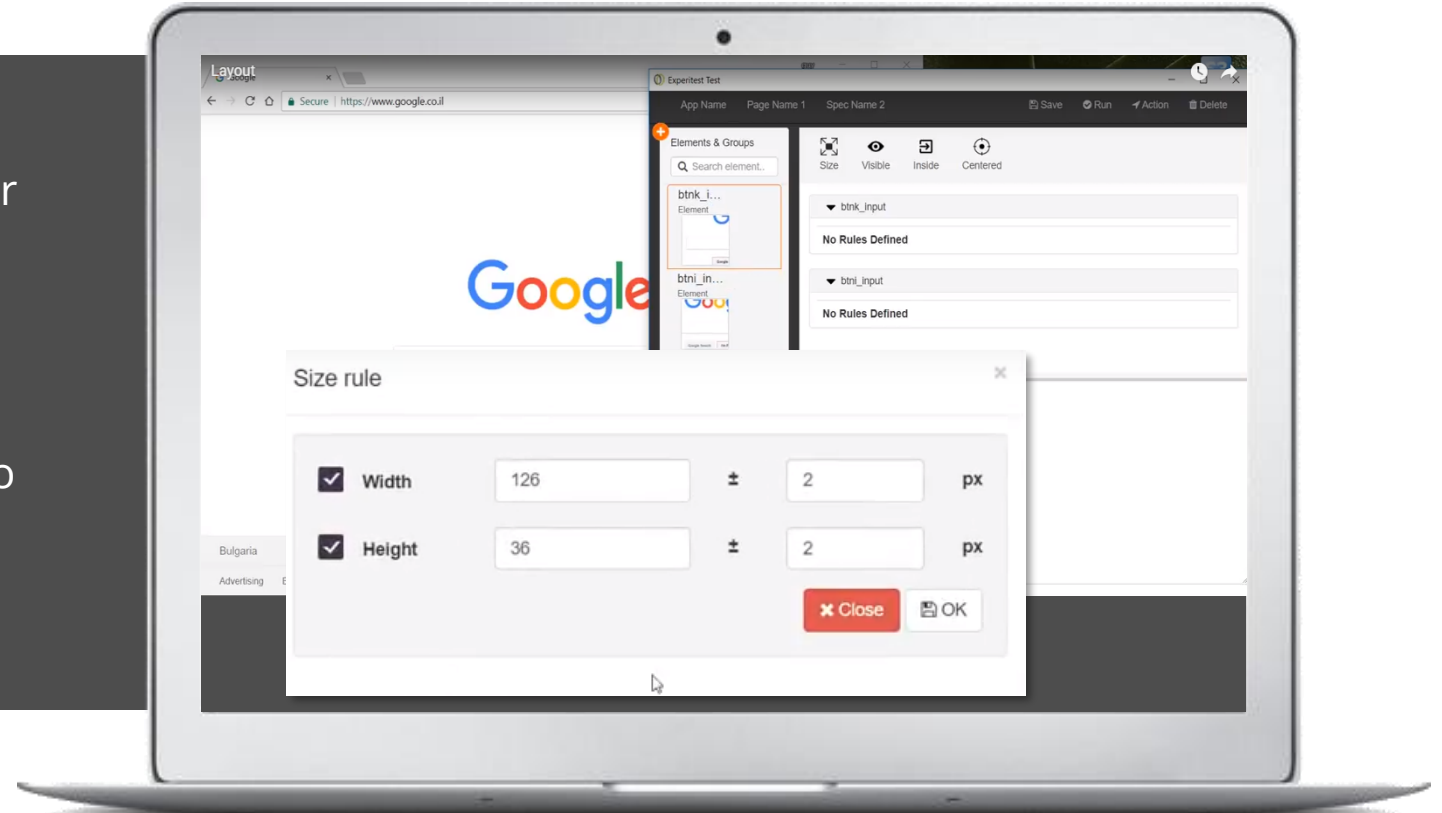
Single test for  
any browser  
and size



OCR text  
visual  
validation



Integration to  
Selenium  
testing

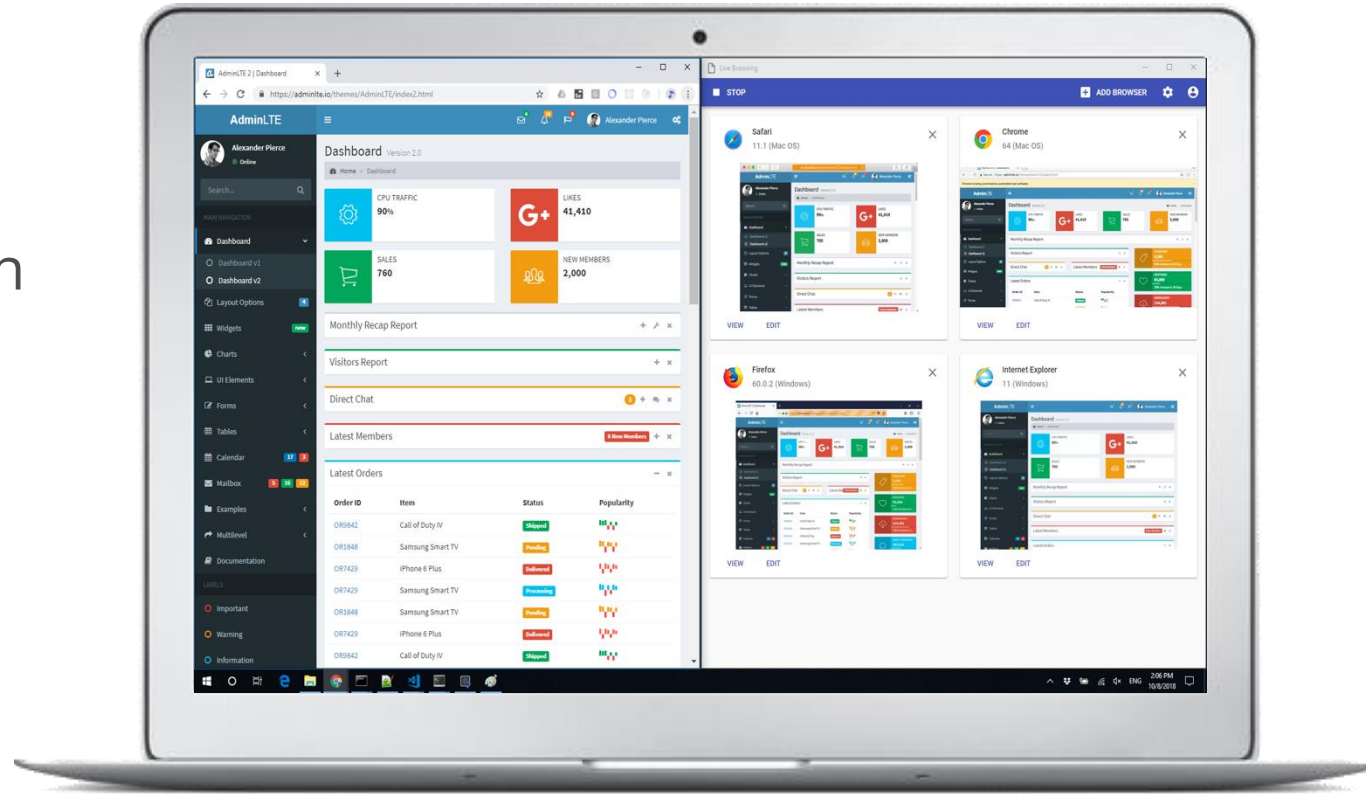


# Follow-Me Manual Visual testing

Multiply manual testing efforts by testing on several browsers and OS



Perform an action once, and see it executed on several browsers and OS simultaneously



Select the from 1000+ remote browser and OS on the digital assurance lab

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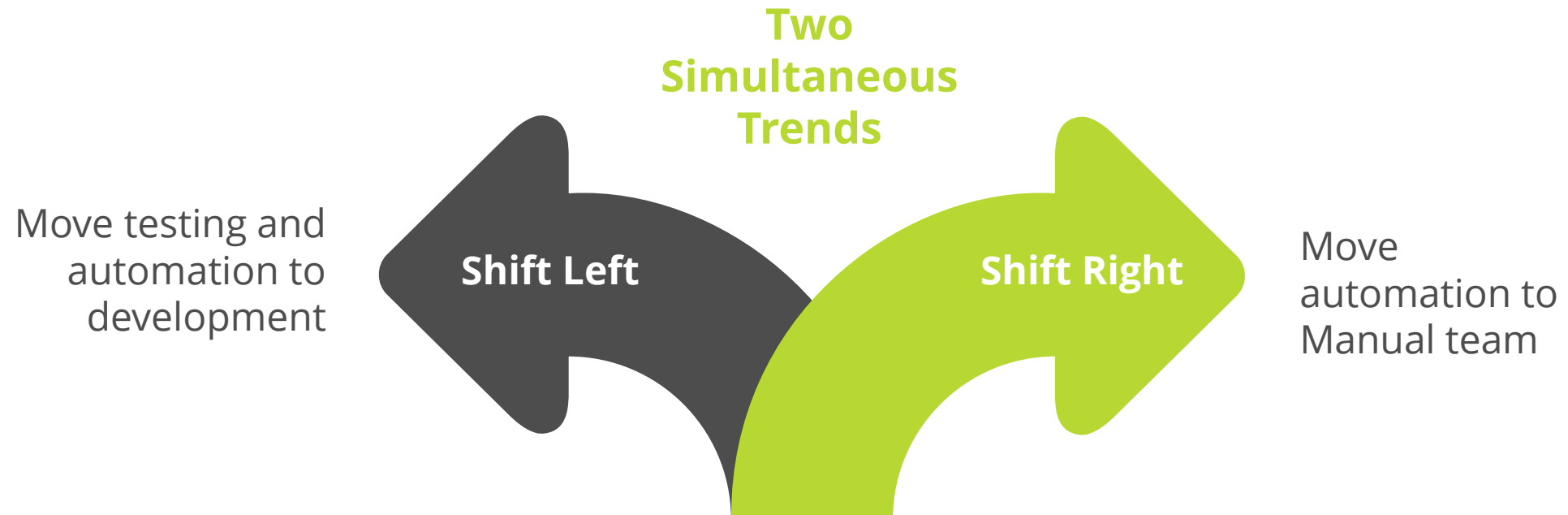
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# What is codeless? Enable manual tester to create automation



Codeless addresses the Shift Right request for simplicity and no need for code knowledge

# Codeless Automation Drives Simplicity

Everyone can take part in quality process

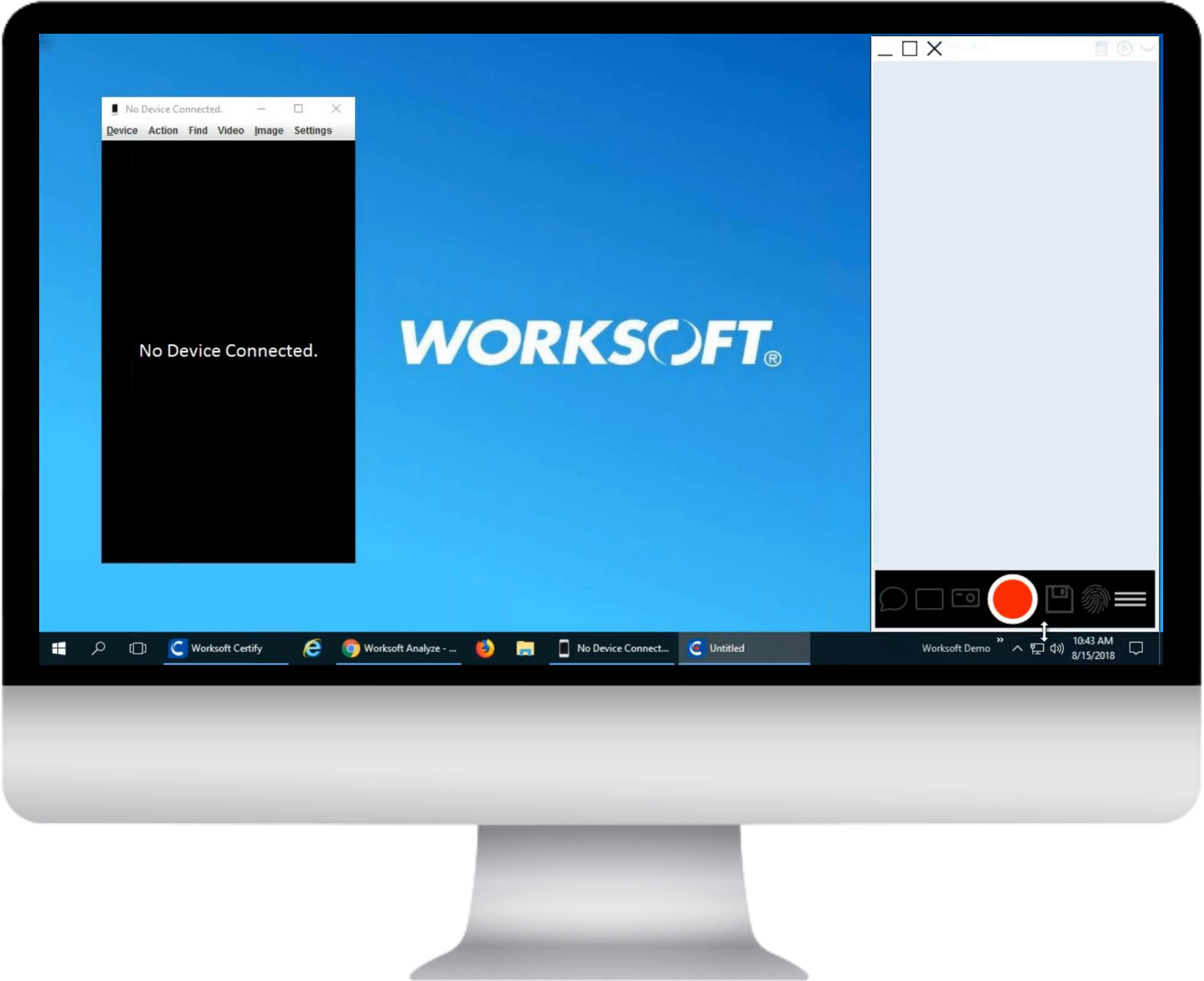
Tests can be created by people from different roles

- Better use cases and tests that reflect different points of view



- Faster test creation
- Shorter feedback
- Shorter release cycles

# Codeless automation – video demo



# Codeless automation - Tricentis demo



# Experitest Codeless Automation Integration Program

Allows codeless providers to embed SeeTest tools into their solutions

- ✓ Object identification, test creation and execution environment
- ✓ Benefits:
  - Enhance user experience with a device reflection
  - Improve test stability with object identification solutions
  - Integration to assurance lab infrastructure for execution (SaaS or on-Prem)
- ✓ Integration using API
- ✓ Examples: Worksoft, Tricentis, and more





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## Case study:

### Multinational bank

- > 280 branches in 18 countries
- > 4 m online banking customers
- > 21,000 employees

## Challenges:

- Omnichannel experience
- Over ten apps
- 8000+ test cases
- Internationally dispersed teams
- Internationally dispersed users
- Move to a DevOps culture – support developers and testers

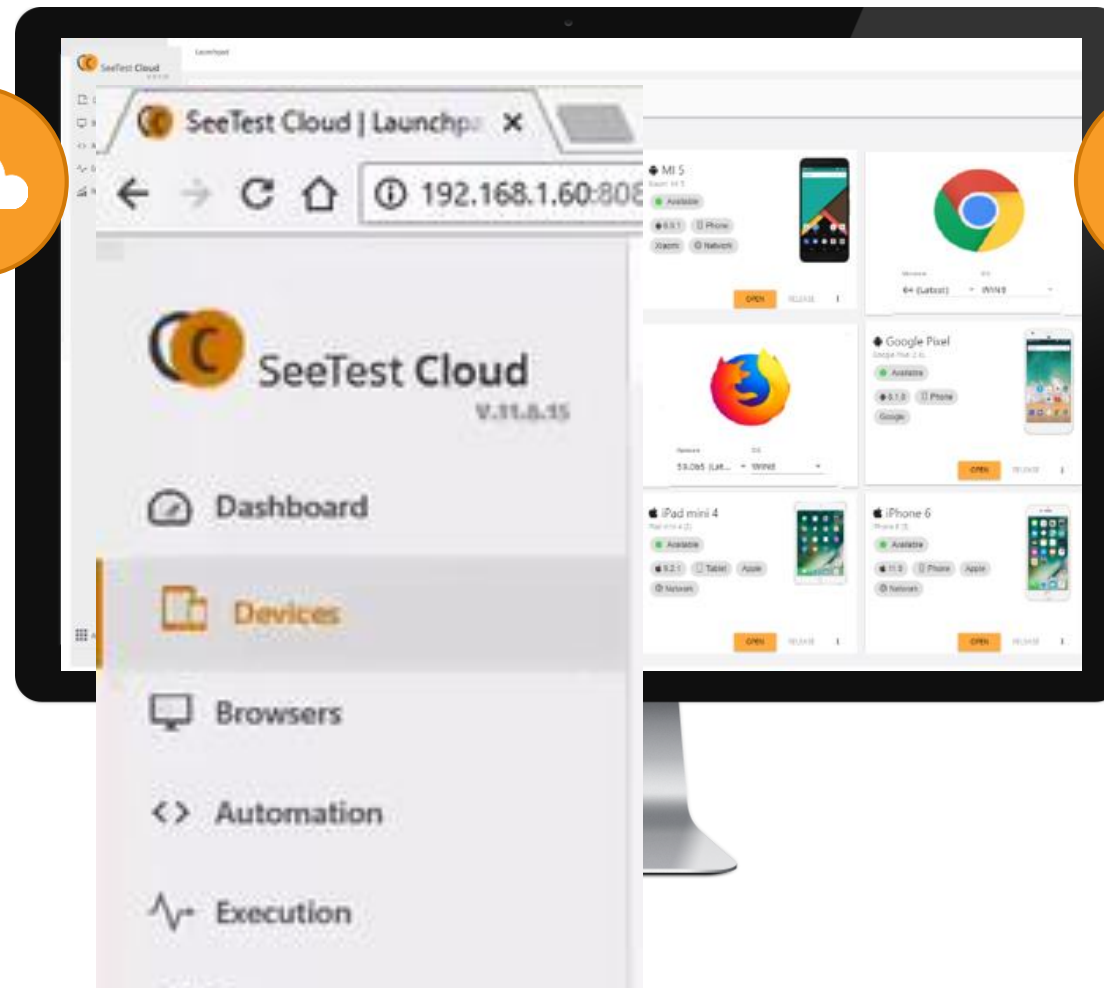
# Implemented solution:

Hybrid on Premise and SaaS Digital assurance lab  
Web + mobile testing in same solution

## SaaS

A private lab hosted at Experitest's data centers

Distributed Teams access remote devices in several locations to test in users local networks



## On-premise

Easily setup a lab on your enterprise's premises with a SW only solution.

# Implemented solution:

Test on 1000+ remote real devices using their local environment



# Implemented solution - Functional + performance testing

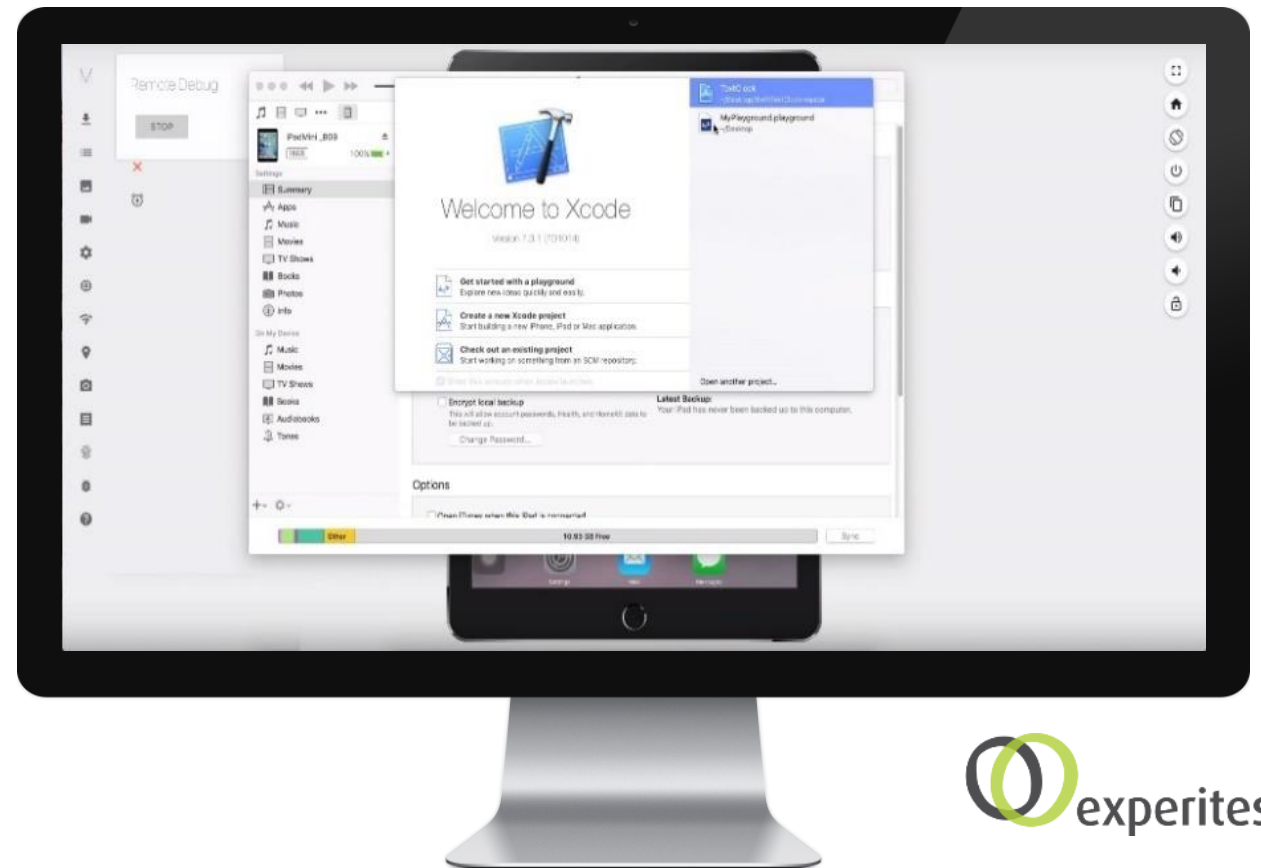
- Test on real devices and browsers in real locations
- Network virtualization to evaluate network impact
- Monitor device vitals – power, battery, memory

The screenshot displays the QA Cloud Expertest interface. On the left, a simulated iPhoneX browser window shows the Amazon website. A 'Capture Network Traffic' dialog box is open over the browser, with a 'START' button and a timestamp '2018-06-17 13:28:36'. Below the browser, a vertical toolbar contains various control icons. The main interface on the right features a navigation bar with 'Log', 'Monitors', 'Automation', 'Report', and 'Accessibility'. Below this, a central area contains three monitoring cards: 'Battery' (Monitor battery health), 'CPU' (Check CPU status), and 'Memory' (See usage and free memory). A 'Network statistics' graph is also visible, showing network usage in Kbps over time. At the bottom, there is a 'Console' section for logs.

# Implemented solution:

Developers use digital assurance lab

- Develop on real device with XCode and Android studio
- Test Automation with Espresso and XCTest
- Debug on real remote devices
- Receive reports and collaborate
- Use network tunnel to test pre-commit





# Results

## Fast release cycle and high customer rating



- 8000-9000 test cases
- 70% test coverage
- 5 day reduction in release cycle
- Added sanity testing

# Questions?

# Thank You!