

# World Quality Report

## North America

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## Summary

- Cloud is a major driver of digital transformation in North America (NA). 77% customer applications in NA are hosted in Cloud.
- Automation is an important trend in NA with 60% respondents saying that they foresee model-based testing as an upcoming automation trend.
- Cross functional skills are in short-supply in NA. 42% respondents say that there is a lack of proper skills for QA and testing.

There are a few things that set the North American market apart when it comes to quality assurance (QA) and testing. The most obvious is the fact that North America leads every other region in the maturity of its QA and testing practices. It is also one of the most customer-centric markets in the world, with customer needs driving many of the changes we see in QA and testing. Finally, the region is marked by a very strong focus on compliance, perhaps second only to Europe. The key QA and testing trends over the last year relate to the continuing adoption of Agile and DevOps, the adoption of artificial intelligence (AI) to help optimize testing, and the impact of the GDPR.

The WQR 2018-19 survey results demonstrate the increasing importance of business goals for QA and testing. For instance, when asked about the objectives of their QA and testing, 47% of North American respondents said, "protect the corporate image and branding," followed by 46% who said, "detect software defects before go-live," and 45% who said, "contribute to business growth and business outcomes."

These priorities are in line with the growing importance of Digital Transformation and customer satisfaction for QA and testing that we have been seeing over the last few years and represent a shift from inward to external goals for QA and testing.

## Digital Transformation and cloud

Organizations in this region were among the first to embark on a Digital Transformation journey. According to the WQR 2018-19 survey, when asked about the testing of digital applications, 27% of North American respondents (vs. an average of 23% across all regions) said that they tested their applications before launch with real users/real devices, followed by 20% (vs. 18% across all regions) who said they tested using virtualization technologies and 17% (vs. 16% across all regions) who said they used a mix of techniques such as digital apps, real users involvement, and social media data.

There are also certain challenges that have persisted over

time for multi-channel testing. For instance, when it came to customer experience testing for multi-channel applications, as many as 24% respondents (vs. 19% across all regions) from the region said they faced challenges with establishing test environments, 23% (19% across all regions) said they faced challenges with establishing the test data, and another 23% (21% across all regions) said they faced challenges with automating this testing.

Another area in which this region leads is in the adoption of cloud. According to our survey, an average 77% of applications in this region are hosted in the cloud as opposed to an average of 73% across all regions. Due to concerns around security, there is a clear preference for private cloud with a greater adoption of public cloud seen in sectors which do not deal with customer's personal information. On average, 25% of applications are hosted in a private cloud, 18% on the public cloud and 17% in an on-premises cloud.

## Agile, DevOps, automation and AI

One of the biggest trends of the last year has been the continuing adoption of agile and DevOps. This is again in line with what we have been seeing over the last few years. This has resulted in most organizations ending up with a bimodal set-up in which both waterfall and agile models exist side by side. Typically, it is the customer-facing applications that are first moved to the cloud and developed using agile and DevOps principles. According to our survey, when asked about testing of agile and DevOps projects, 46% of North American respondents said, "we use analytics on all available project data to optimize our test sets," followed by 45% who said, "we use analytics from operations to determine or optimize test coverage," and 36% who said, "we integrate automated test cases in the automatic deployment tool."

In their quest to improve the efficiency of their QA and testing activities, organizations are increasingly focusing on automation, and the last year has also seen an increase in the popularity of open source automation tools. When asked about the new automation techniques they foresaw using in the coming year, 60% of North American respondents pointed to model-based testing, 58% talked about robotic process automation (RPA), and 52% indicated predictive analysis or automated identification of risk areas. The increasing popularity of these automation techniques is no fluke, for each of these techniques help reduce the time spent on QA

and testing and improve an organizations ability to control the risk coverage of its testing activities.

Another related trend that has emerged in the last year, is the use of AI in combination with automation to optimize QA activities. According to our survey, as many as 48% of our North American respondents are using analytics and AI for intelligent automation. In addition, 39% of respondents said they were using AI for predictive analytics, and 33% said they were using AI for descriptive analytics to optimize QA and testing.

## The skills gap

Technologies such as automation as well as the increasing adoption of agile and DevOps have led to a change in the skills required from QA professionals. Agile teams require professionals with a mix of diverse skill sets, including development, automation, and domain knowledge. This has led to the increasing need for software development engineers in test (SDETs) in project teams. At present, there is a lack of such well-rounded professionals in the market and this is one of the main challenges holding back the evolution of QA and testing today.

This challenge came through clearly in our survey results. For instance, when asked about the technical challenges in developing applications, 42% of North American respondents pointed to a lack of proper skills for QA and testing. Similarly, 29% said the lack of skilled and experienced test automation resources was a challenge holding them back from achieving their desired level of test automation. In order to deal with this challenge, organizations need to invest in retraining programs, skill development workshops and internship opportunities to develop a pipeline of available talent.

## Conclusion

The North American market is clearly ahead of the curve in terms of the maturity of its QA and testing practices. The last year has seen both an intensification of old trends such as the adoption of agile, DevOps and cloud as well as the emergence of new trends such as the use of AI in QA and testing. We expect these trends to keep intensifying over the next few years. At the same time, there are a few challenges such as the skills issue pointed out above, which the industry will have to solve to enable a faster evolution and a better return on investment from QA and testing in the future.



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