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# World Quality Report

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## Germany

Germany is a country that takes quality seriously – and that involves a focus on collaboration and end-to-end testing

We have witnessed two significant trends in Germany over the last year.

The first is technology-driven: there is a high demand for end-to-end testing, including a high level of test automation. The difficulty here is that the acceleration of pace in the move to agile and DevOps development means that the nature, shape, and timing of testing is being forced to evolve. Testing has to begin at an ever-earlier stage of development, which means German organizations increasingly need to find people who are skilled testers but can script test routines within development stages (without having a front end in place) and who also know how to set up end-to-end test automation frameworks. A basic understanding of test automation is a core skill for every test expert.

Another aspect of the end-to-end testing issue is the development of several constituent test elements. Load and performance testing have increased significantly in recent months, because performance is a significant factor in the delivery of a satisfactory customer experience, which makes them more important than straightforward functional testing. Security testing is also an important part of the complete QA mix. Germans are very apprehensive about dangers such as ransomware, and they like to act early and robustly to tackle such threats. The need for security awareness is increasing.

The second significant trend is a change in collaboration models. Now more than ever, German organizations are seeking relationships with external services partners who can help right across the complete quality assurance spectrum, and this in a fully agile-driven way. To cover the complete QA chain, they're seeking partnerships in almost every conceivable area, including quality management, requirements analysis, (automated) functional testing, load and performance testing, and security testing. The shift is away from pure testing partnerships, towards integrated, agile-driven, or DevSecOps-driven QA

approaches that include security as an integrated component in the DevOps model. Former testing teams will become an end-to-end QA squad in those software development approaches.

### Serious commitment

These initial observations are borne out by many of the findings reported by Germany in this year's survey data. Within overall IT strategy, we see higher-than-average levels of importance being assigned to enhancing security and customer experience, and to responsiveness to business demands via flexible IT. Elsewhere, we see 57% of Germans saying they don't have enough time to test their key applications. Why? Because, in spite of an increasing squeeze on budgets and faster software development cycles, they insist on doing a thorough QA job. This is a country that takes quality seriously.

Further corroboration can be found among the technical challenges Germany is currently facing in applications development. Far and away the greater such challenge is, as noted, the lack of end-to-end automation, from build to deployment. Seventy percent of German respondents have reported this issue, which is seven percentage points ahead of the rest-of-world average.

Germans also report a lack of proper skills for QA and testing. This is largely because of the shift to agile and DevOps environments, and we see many businesses seeking seasoned QA professionals with skills in these areas. What is sometimes surprising, though, is to find that some people are still not aware of the need to change. There are experienced and certified test professionals who don't seem yet to have fully appreciated the effect of these new development environments on the space they occupy, not just in theory, but in hard, every day, practical terms. Besides the technical know-how, the experts need to be trained in soft skills and proper



communication in order to collaborate in scrum/ DevSecOps teams and partly delicate environments.

## Germany is getting agile

This shift is quantified in the responses given when people were asked about the extent of the overall project and team effort they have allocated to different development methodologies. Germany reports a 29% allocation to agile, and a 33% allocation to DevOps – significantly higher in each case than the figures averaged by other countries in the survey. Even though some businesses are eschewing purity and customizing their approach, the trend is clear: we going to continue to see more agile, and more DevOps.

The challenges with agile developments can be daunting. Agile is a shift-left environment, requiring a lot of early test data, and German respondents are telling us that this data is lacking, and so are appropriate test environments. Indeed, as many as 82% of our German respondents report this issue, against 56% for our survey-wide cohort. Other challenges include an inability to apply test automation at appropriate levels, and a lack of appropriate professional test expertise (to which we shall return in a moment). However, the difficulty of estimating test effort in agile initiatives is on a par with global averages. We would have expected this figure to be higher – it's a complex area, because there is no predefined sprint, and knowing how to break things down and automate them can be difficult.

A key point worth noting about testing in this context is, as some others in this year's report are pointing out, that many organizations don't think of testing in agile as a separate thing, but as something that is integral to the entire development process. This viewpoint may well skew figures on questions like this, both now and in years to come.

Let's return to the skills requirements that agile developments can create. In Germany, we can see some significant needs in this year's survey. The need for generic coding skills is a given;

we have already noted Germany's sensitivity to security issues; and the need for skills in collaboration and communication is no surprise, either. If developments in this area are to be a success, organizations are going to need open, fair, and objective communication.

## New test strategies

Elsewhere in the survey, we also see German businesses articulating skills needs in artificial intelligence (AI) and machine learning. There are fewer projects in these areas than in the rest of the world that are planned or currently in progress, and the country is investing to catch up. The need to understand the implications of AI on business processes is considerable (55% of German respondents, against a survey-wide average of 36%), and we also see the need for an entirely new test strategy that AI is prompting.

Which brings us to trends in testing environments; and while the numbers show that almost half (46%) of German respondents say their testing is still occurring in a traditional, permanent testing environment, in our experience, there is a distinct trend toward virtualization and the cloud – as long as that cloud is suitably secure, and processes are GDPR-conformant, of course. One of the main drivers of this trend is cost, but it remains to be seen whether cloud-based test environments will indeed be cheaper.

Finally, a brief word about testing budgets. We see that 79% of German respondents report an increase in proportional effort and spending on QA and test activities over the last three years – and over the next three years, they anticipate that, as a proportion of their total IT budget, testing will account for 31%. In our experience, the proportion in Germany is typically in the 25% to 35% range, so this figure is in line with expectations.

These figures are higher than for other countries, but that is perhaps to be expected. After all, the German commitment to quality is well known.



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