

# CHINA

## Self-belief helps maintain momentum

David Chen

Associate Testing Director,  
Capgemini China

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In last year's analysis, the general mood surrounding quality assurance (QA) in China was one of energy and enthusiasm. Organizations were business-focused and the buoyant economy gave us good reason to believe that greater investment would be made in QA – in particular in areas where progress needed to be made, including intelligent test automation and the use of artificial intelligence (AI) and machine learning (ML).

### Signs of success and self-belief

The focus in China this year is still very much on customers. Last year, enhancing the customer experience was deemed to be the second-most important aspect of IT strategy. This year, it's top, with over two-thirds (68%) of respondents saying it is vital. Achieving a higher quality of software solutions also featured prominently (66%).

A sense of urgency is apparent in relation to testing and QA objectives. Easily the highest rated, and substantially over the global average, was the need to make QA a smarter and more automated process. A full three-quarters (75%) of Chinese respondents rated this as highly important. We see this in the field: many organizations are now testing within DevOps environments, and automation is being seen as a way to integrate and accelerate QA processes. Responses for other highly rated testing objectives also suggest a need to make swift progress: over two-thirds (68%) highly rated the need to achieve quality at speed, and almost as many (66%) placed a high emphasis on the need to detect software defects before go-live.

The signs of progress are encouraging. Against every suggested applications development target, Chinese respondents felt they were succeeding to a greater degree than average. For example, two-thirds of them felt their testing covers all that is needed (67%) and that activities across distributed teams are well orchestrated and regulated (66%), and 61% of them

said requirements are clearly defined. In addition, when testing key applications, 59% of them said they have the right testing strategy, process, or methodology, which is a large increase on last year's figure of just 37%.

For Chinese respondents, the most important factors in testing efficiency this year were having adequate staff with the right skills (61%) and also, rated highly by even more people, better communications and collaboration across the lifecycle (64%). An integrated approach to QA is indeed the most significant area in this market.

Where, we asked, should the QA focus be post-COVID? Once again, high-scoring responses included customer experience validation (49%) and better collaboration tools for teams (47%), but the highest of all, at 50%, was a focus on improving automation of QA activities.

Let's take a closer look at this area now. Why is test automation increasing in importance in China?

### Intelligent test automation: benefits and plans

The answer is directly related to the benefits being achieved. In every instance, more Chinese respondents than average reported that test automation was delivering distinct advantages. These included better control of transparency of test activities (76%), which is something we hear in the field; better test coverage (64%); and reduced test cycle time (also 64%).

It's little wonder, then, that so many Chinese organizations told us they have plans to use automation techniques within the coming year. Almost two-thirds of the country's respondents (64%) said they were planning to use robotics automation for test activities; over half (57%) said they would be automating the generation of

test data; the same percentage (57%) said they would be using continuous pipeline automation; and 53% said they would be using model-based testing tools to automate test case design. In every instance mentioned here, Chinese responses were above average. In the case of robotics automation, the margin was a full ten percentage points.

## Agile and DevOps: improvements being made

Automation is one of the main approaches Chinese respondents are using to speed up and optimize testing in their agile and DevOps environments. Improvements in these development disciplines have been substantial in China this year: as many as 81% of the country's respondents reported excellent or very good improvements in cost of quality, and 74% said the same of speed to market.

However, China does have some challenges in this area. Half (50%) of the country's respondents said they have difficulty in getting the right test environments and test data, and even more (61%) said they have difficulty in aligning the tools their teams should use. In our experience, this is a subject that Chinese organizations spend a lot of time discussing. There is no solitary "best" solution here: there are so many variables.

This probably explains why the single most-critical factor for success identified by Chinese respondents this year in agile and DevOps adoption is that of productivity and monitoring tools, which were rated as vital by 60% of them. Several other critical success factors were highly business-oriented, as we would expect. They included business priorities (50%), the culture and agility of the organization (49%), and executive support (47%).

## Progress in AI and ML

When we look at the current status of artificial intelligence and machine learning in Chinese quality assurance, an interesting picture emerges. A high proportion of respondents (60%, against a survey average of just 42%) felt able to say, "I have identified applications that would benefit from AI/ML;" more than half (55%) said they have an established repository of the test execution required by an AI/ML platform; and almost as many (50%) said they have confidence that this repository is correct and accurate. And yet, despite all this, only 30% of them felt their business owners trust the intelligence provided by their AI/ML

platforms. It seems that the QA teams feel ready, but that their business leaders remain apprehensive.

Perhaps this is why so many Chinese respondents felt that, as far as AI was concerned, their greatest skills gap was in the understanding of its implications on business processes. As many as 42% of them said skills were lacking in this new area, against a survey-wide average of 30%.

There may be some hesitation on the part of business owners, but we don't see this among the QA teams. A question about plans to use AI in testing showed that higher-than-average proportions of Chinese respondents said they will be using smart dashboards, using AI to store and reuse important domain knowledge, using AI in their test execution activities, and also using AI to generate test environments and test data.

## First steps in Intelligent Industry

Probably the most far-reaching technology trend right now is digital transformation; and one of the areas in which it is most visible is what is being termed the Intelligent Industry, in which organizations digitize the key industrial parts of their businesses. They're using embedded software, data, 5G, edge computing, smart technologies, automation, and the internet of things (IoT) to rethink what they do, and how they do it.

In China, our respondents told us the key drivers for the intelligent industry were operational. Improved productivity and efficiency (54%) were highest, and next came cost reduction (46%). Both these responses were higher than average.

Which key factors will help organizations achieve these and other objectives? This is of course still a new area, and Chinese respondents felt that leadership support and funding would be vital. They also emphasized the importance of adequate simulation environments, of the requisite skills, and – once again – of the right tools and frameworks.

## Growing confidence

What's the key takeaway from all this? Probably, it's that the energy and enthusiasm we noted in China last year has been helping to contribute to a general move forward. We're seeing progress in test automation, in the use of AI and machine learning, and in the adoption of agile and DevOps. Perhaps most importantly of all, we're seeing growing confidence – and often in life, it's this self-belief that is key to maintaining momentum.



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**David Chen**  
Associate Testing Director,  
Capgemini China  
[david.z.chen@capgemini.com](mailto:david.z.chen@capgemini.com)

### Contact Micro Focus

If you desire more information about testing tools, please contact:

**Jessica Zeng**  
Enterprise DevOps Leader  
[jessica.zeng@microfocus.com](mailto:jessica.zeng@microfocus.com)  
+ 86 18618287781

