QUALITICS

THE DEFINITIVE GUIDE TO CROWDSOURCED TESTING

QUALIFLY

Headquarters: New York, NY, USA.

Industry: Software Engineering, Testing, & Consulting Services

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The challenge

Customers cannot access the right testers for testing digital products and Apps before launch in a cost-effective manner.

The solution

Sign up on Qualifly and get connected to an approved Testing Service Provider for all the testing needs, cost-effectively with quick turnaround. Customers are charged based on the output and the Test Plan they choose.

The outcome

Thirty percent (30%) decrease in testing costs and premium test results along with 50% reduction in time.

Introduction

This quick guide will walk you through the important aspects of Crowdsourced Testing which is an emerging business model for software testing. It is useful for companies looking to delegate their testing processes to well-established testers/crowds from around the world and obtain premium test results before launching their digital products in the market.

What is Crowdsourced Testing and Curated Crowdsourced Testing?

The term “crowd” refers to a group of individuals who are selected globally on the basis of their professional qualification, testing experience, professional background, or the devices that they work on to execute real-time testing scenarios and report bugs for a digital product.

Crowdsourced testing or simply, Crowd Testing (CT) is the method of testing applications that may include mobile apps, web applications, IoT things, , interfaces, etc. using crowds.

Curated crowdsourced testing involves selective crowds or service providers to do the QA testing for you. Qualitics has implemented this novel concept to ease the process of finding the best testing team to do the job for you using ***Qualifly***- *“Qualifly Assurance is the New QA”*. This platform works on an outcome-based subscription model to fit the budget and time requirements of enterprises as well as start-ups.

Why Curated Crowdsourced Testing (CCT)?

For Companies

CT has gained a lot of attention in the recent years because it is the only way a company could get deep insights into the performance of their application, its quality, and the bugs/defects associated with it through genuine and real-time feedback. Curated CT ensures that a certified crowd of specialists test your products, a wide range of testing options are at your disposal, and premium reports are obtained on-the-fly. Sign up, choose your test plan, and receive quick results.

A Cost-effective Option

- No Fixed Salary Model
- ‘Ready to Work’ group of highly qualified resources
- Cost of retaining and retraining is avoided
- Reduced CAPEX and OPEX

Reduced Time to Market

- Quick and reliable tests
- The Correct number of testers are hired
- Multiple testers with similar skills are hired

Assured Quality of Tested Application

Quality requirements and parameters are monitored. Thus, CCT is the preferred method of testing in comparison to having your own Testing Centre of Excellence and Outsourcing because:

- Your Applications can be tested globally with the diversity of location, language, device, and environment for more effectiveness
- You have 24/7 service availability
- You have on-demand access to a flexible workforce
- Each cycle can be allocated to multiple testers in hours
- Specialist testers can be sourced for specific requirements
- It supports an outcome-based pricing model which guarantees transparency, predictability, and accountability for business results
- There are no overhead costs associated with this model
- Crowd testing helps get unbiased opinions from testers with a neutral outlook
- The applications receive an increased test coverage w.r.t test scenarios, environments, and conditions
- Everything is automated thus, the client can access their account and track the progress of their product's QA testing, create new projects and releases, and activate releases using the Qualifly CCT platform

For Testing Service Providers

The flexibility that it offers testers in terms of pay, time, work location, and the diverse range of applications to test is simply astounding.

How Does Crowd Testing Work?

1. Customer enlists all the testing requirements along with the testing scenarios, device configurations, and the necessary skill set of the testers required for the project
2. The type of testing and the test plan that suits the client's budget is also selected
3. The testing service providers complete their profiles and get registered on the Testing Service Platform for the client to view
4. Clients can choose the basic test plan to gauge the testing service provider's (TSP) service quality and decide to continue or switch the TSP
5. After assigning the project(s) to the TSP, they are provided with the instructions, detailed test plans, scripts, etc.
6. Testers perform the testing and update their reports to the customer through the testing interface which can be accessed through the real-time dashboard
7. A rating system is maintained that determines the quality of the work delivered by the TSP
8. Discussion of various issues and concerns is done on a common channel

Pricing Models of Crowdsourced Testing

- Unit rate per defect identified: Defect severity-based slabs or there could be a cap on the overall pricing
- Fixed price for the agreed number of hours or test releases
- A combination of fixed and unit rate pricing models
- **A Subscription model for an output-based test plan (The Qualifly way)**

The Five Important Phases of Crowdsourced Testing

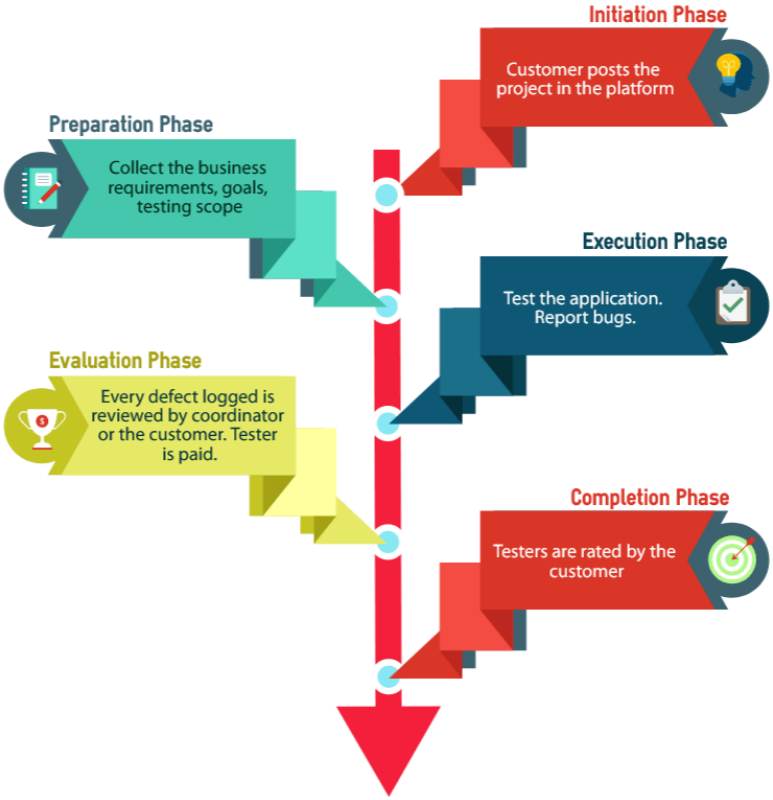

Image Source (www.tryqa.com)

Serviceable Market

The applications that are supported in cloud with less stringent security requirements are more favourable for the CCT testing.

Crowdsourced Testing Mechanisms

Many techniques are implemented in crowdsourced testing based on the type of QA requirement. Depending on the testing goals and applicability, five major techniques and their combinations offer a varying range of effectiveness. We will categorize these mechanisms based on their characteristics that will influence project costs and leverage the achievement of testing goals.

Redundancy

This QA mechanism involves assigning the same task or set of tasks to different groups of testers or individual testers with different testing capabilities. The goal is to observe how the same testing task can render multiple results which will help in identifying any major issues if they occur frequently with a majority of the testers/testing groups.

The test is carried out on different devices, at different locations, and in varying conditions (weather, internet connectivity, etc.). This results in multiple results aggregation which are brought together to build the final product. A major task may be divided into micro-tasks, multiple instances of which are assigned to different groups of testers.

Control Group

In this technique, the main group of testers is controlled by a separate group known as the control group which provides the instructions and performs the rating. Curated crowds are examples of this mechanism where the testers are chosen by a control group and the results of the tests on the products are voted for to determine if they are acceptable or not.

Rating is defined as a classification or ranking something based on a comparative assessment. When the controlling party consists of more than one individual, the controlling group needs to reach a consensus consciously.

Using control group mechanisms are cost-effective when the primary testing task is complex. The control group may not only be responsible for approving and denying the submissions but also providing feedback, the rationale for the decision made or improving the submission. The quality of testing is improved through multiple control group responses.

Gold Standard

This method is also called ‘Ground Truth Seeding’ and is defined by a set of trusted and standardized inputs inserted for each test case which include the set of expected results for each test execution. If the contribution of testers deviates significantly from the trusted standards, measures are taken to improve the quality of testing.

In this mechanism, testers are provided immediate feedback on the process including the gold standard answer to ensure that expectations are met by testers. Incompatible submissions are compared to form a pattern that would reveal inefficient testing efforts.

Submission patterns of workers are used to define individual reputation which can be used to establish a trust evaluation infrastructure for the crowdsourcing system or platform. The sample size of gold standard tasks must be large enough so that probability of the same tester to be assigned with the same gold standard tasks within the process is quite low.

Worker Characteristics

This mechanism is also called the **worker-centric method**. Crowd testing mechanisms based on worker characteristics can only be used in cases which the workers do not have total anonymity. A large spectrum of areas is focused on to develop ways to improve crowdsourcing quality by studying testers.

These areas include but are not limited to crowd demographics, participation inequality, contributor biases, worker character stereotypes, and motivation. Reputation is the key factor that defines trustworthiness of testers and is based on former submissions made by them. The future selection of testers or testing

service providers in case of curated crowds is based on their reputation and inefficient testers are also identified and avoided for future assignments.

A tracking infrastructure is set up to identify the testers who contribute high-quality results consistently.

Design Characteristics

Also known as the **design-centric method**, Quality assurance can be achieved by designing user-friendly and more robust tasks. The two approaches are Defensive task design and statistical approach. In the first method, tasks are designed in a cheat-defence way where completing the task in good faith is promoted more.

It is also recommended to include verifiable segments in tasks so that the statistical quality control of a task sample becomes possible. Through a statistical approach, the distinction between a predictable error (bias) and unrecoverable error (spam submission) is clearly made. The error rate and expected cost of a contribution of a particular tester are calculated using an algorithm that depends on a confusion matrix and soft labeling technique.

In the crowdsourcing scenario, time-to-complete is an effective metric to identify ineffectiveness. In this method, advertising a task is done by assigning it a good, representative and interesting title and annotating the task with suitable tags in a crowdsourcing platform.

Implementation of the 5 Mechanisms in Curated Crowd Testing

Mechanism	Implementation	Benefits
Redundancy	The same task or set of tasks are allocated to the testing service provider that has been selected based on a test plan.	▪ The best-perceived quality of the same task can be determined ▪ Main tasks and quality control tasks can be differentiated ▪ Resource utilization can be optimized
Gold Standard	Expected results and standards of testing are given to testing service providers. Testers receive immediate feedback including the gold standard answer to ensure that expectations are understood clearly by the tester.	▪ Tester deviation from the standards laid can be measured efficiently ▪ Immediate feedback can be provided based on the Gold standards ▪ A trusted evaluation infrastructure can be set for testers to follow • Competencies of testers can be strictly evaluated before assigning the main

Mechanism	Implementation	Benefits
		task(s) to them which saves costs • Task pool content can be altered dynamically to test efficiencies
Worker Characteristics	This method focuses on the talent and qualification of the testers. Their geographical location, testing capabilities, interests, speed are considered to ascertain the reputation of the tester and trustworthiness for hiring purposes.	▪ Helps in eliminating inefficient testers ▪ Reputation can be used to engage capable testers in future tasks ▪ Specific tasks can be assigned to the right testers which can save cost and time
Design Characteristics	Tasks that have a robust design to avoid loopholes are allocated to testers. This method helps in calculating the costs of individual tests by calculate the error rate and expected cost of a contribution of a particular tester provided by the Testing Service Provider. The task size can make a difference in the quality of tester contributions. Clear instructions are given to the curated crowds for testing tasks.	▪ Leads to the design of user-friendly and more robust test cases ▪ Statistical quality control of tests helps in generating ideal results ▪ Time-to-complete tasks can be determined easily ▪ Submissions can be tagged for further testing or automatic denial ▪ Payment needs to be made only for tasks that are acceptable by the client

Scenarios Where Crowd Testing is the Most Beneficial

Load Testing of Application Servers

This method of testing determines the maximum load that the application can take and its behavior when multiple testers would hit the application at the same time.

Geographical Condition-Based Testing

Mostly done for mobile devices, this method helps test mobile applications in diverse weather conditions, topographies, mountain areas, connectivity zones, etc.

Identifying Issues Specific to Devices/Browsers

The crowd involved in testing a particular application provides multiple combinations of devices and browsers and thus certain browser/device specific issues can be determined which may not be identified in traditional testing environments.

Network Issues

This testing determines the behavior of the application under varied network conditions like cellular mode, flight mode, Wi-Fi, etc.

Usability Issues

It is best suited for testing usability scenarios as it involves multiple live users

How to Choose Your Crowd Testing Service Provider?

Clients need to evaluate their testing service providers before delegating projects. The following pointers can help.

- Experienced CT companies are the best choice if you are looking for less maintenance and governance costs because of their relevant experience, global outstretch, skill delivery, security, and quicker turnaround. In this case, costs may be high because of the quality and experience in testing
- Mid-scale CT companies can offer small projects like mobile applications, website testing at affordable costs but may lack experience
- Terms and Conditions, Pricing structure, Security, Confidentiality, Safety, Quality, capabilities, Delivery methodologies, Compensation structure, Risk management are a few imperative points that should be analyzed before choosing the CT service provider

Challenges

- Maintaining the confidentiality of information within the crowd
- Close monitoring if the tests and bugs reported is solicited
- Crowd synchronization at different locations

Future Trends

- Pure-play crowd testing will become expensive increasing the operational costs
- Curated Crowd Testing will gain traction
- Integration with social media will become a key influencer
- Incentive model for crowds will come into play where a combination of money, social reputation, and service credits will be implemented
- According to NASSCOM, the overall testing services industry is expected to grow at a CAGR of 23% in the next couple of years

Do read our blogs on Disruption in Software Testing Services and Digital Transformation in Software Testing Services to understand the future trends in crowd testing services.

Conclusion

Crowd testing is currently a complimentary testing service that supports internal testing efforts, but will soon become an integral part of software testing. Organizations need to integrate crowd testing as part of their overall test strategy to reap the benefits of diversified software testing services that have a global outreach

About Qualitics

We Are a **Boutique Consulting Firm** with a passion for providing innovative solutions around the globe and recognized **Thought Leaders** in the **Software Testing Industry.**

At Qualitics, We Chase Perfection with Our Core Values:

- Change – In Will.
- Humility – In Being.
- Agility – In Action.
- Simplicity – In Thought
- Equanimity – Always

Office Locations

- Ashburn, VA, USA
- New York, NY, USA
- Doha, Qatar
- Hyderbad, India

ABOUT QUALIFLY

The idea for Qualifly was born out of the sheer need for improvements in the world of Quality Assurance and the dismay of the Founding Members with how Software Testing has been handled. Qualifly was launched to counter the ingrained testing culture and enablement of the next generation of testers and Quality Assurance engineers. For More information, visit us at **www.qualifly.us**

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