

Market Guide for Crowdsourced Application Testing Services

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The providers in this document make more than 1 million crowdtesting community members combined available to sourcing managers and application managers. This document will help with selecting crowdtesters when creating a testing sourcing strategy with additional options.

Key Findings

- The potential benefits of crowdtesting include getting speedy access to skilled resources of chosen demographics that will test in any chosen location, with their own devices and at attractive rates.
- The key risks associated with crowdtesting include security and intellectual property (IP) ownership considerations as well as the governance involved in managing the crowd.
- The most common uses today include various specialized testing needs such as functional testing for mobile, web-based applications and sites and usability testing. Crowdtesting is most effective when ensuring quality and functionality with primarily external users; not traditional application service testing or where only internal users are involved.
- The future direction of this market is driven by traditional IT service providers adding crowdtesting services to their portfolio, further increasing clients' awareness of this model.
- Using crowdtesting to test mobile applications is a big opportunity, but the Internet of Things (IoT), which is part of digital business, could be an even bigger opportunity to meet challenges for organizations to test and consider the quality and functionality of devices that are interconnected.

Recommendations

- Use crowdtesting for cloud, web-based and mobile-based application development and testing needs, where agility, innovation, a short time to market and/or consumer experience are leading requirements and applications are consumer- or employee-focused.

- Decide whether vetted or unvetted crowdsourced communities can be used or a service provider is the best option, based on previous crowdsourcing experience, willingness to invest time in the management and governance process, budget available, and willingness to accept risk and potential security breaches.
- Require application architects act as crowd curators to manage crowdsourced delivery, either delivered through vetted or unvetted crowdsourced communities.

Strategic Planning Assumption

By 2018, crowdsourcing will constitute 20% of all enterprise application development sourcing initiatives.

Market Definition

Crowdsourcing has been used by companies for many years where it has been beneficial to use the power of the crowd for the purpose of rapid access to technical skills and capabilities for specific tasks at very attractive price points without the need to hire specialists (see "Harnessing a Global Talent Pool Through Crowdsourcing Can Increase Speed and Deliver Innovation"). Gartner inquiries about using crowdsourcing have grown by around 40% in the past year.

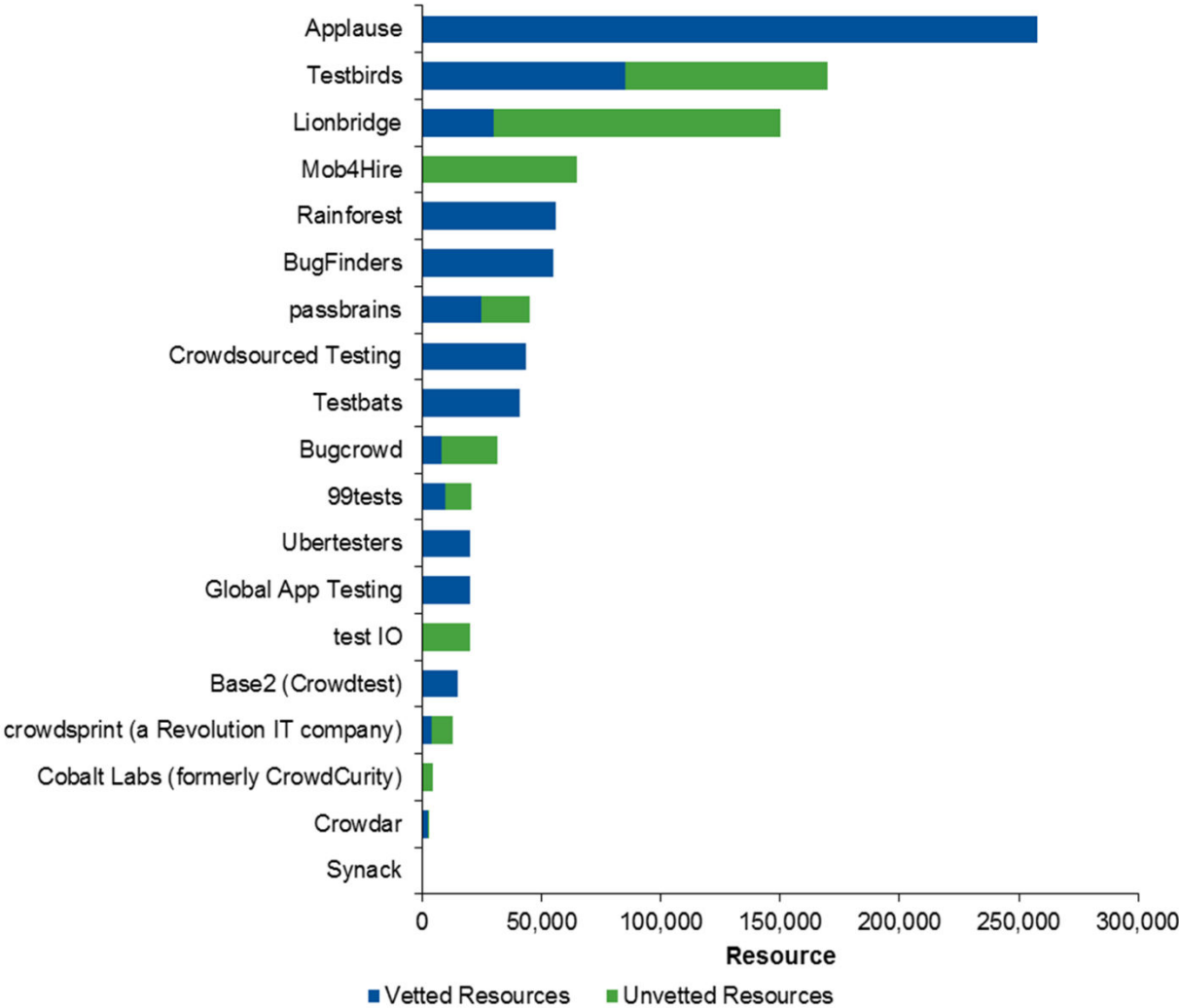
The total number of testers available from the vendors profiled in this document exceeds 1 million.

The purpose of this research is to cover the crowdsourcing marketplace for testing, which we will refer to as crowdtesting. For a full definition of crowdtesting, see Note 1.

There are two main categories of crowdtesting services; vetted communities and unvetted communities. Vetted implies that the individuals have been vetted and verified by the crowdsourcing firm before connecting them with a client. There are also full service providers offering crowdtesting. These categories are explained further in Note 1. This guide concentrates on the pure-play vetted and unvetted providers.

Figure 1 illustrates how the communities of the providers in this guide are made up of either vetted or unvetted resources.

Figure 1. Composition of Vetted and Unvetted Resources Across Crowdttesting Provider Communities



Note: Figure 1 only includes the providers in the guide where the split between vetted and unvetted has been shared by the respective vendors with Gartner.

Source: Gartner (October 2016)

Market Direction

Crowdsourcing, enabled by technologies like cloud and using social collaboration tools, is an innovative alternative to help organizations with various external consumer-focused services — such as product evaluations or ideation for new products — and internal IT services, including testing. The primary use case today by clients of crowdtesting is around ensuring quality and usability (addressing the consumer experience) of any customer-facing application where it is essential to have access to multiple testers in various locations, using real devices, multiple variations of technology configurations and platforms, based in different locations and speaking

different languages. Crowdfunding is also often used for various specialized testing needs and application testing that does not constitute entirely internal users. Crowdfunding is less focused on traditional application testing and will remain so.

New innovative business models such as crowdsourcing will start to make up a larger share of end-user services to enterprises over the next two to three years. However, as crowdfunding is currently positioned at the Peak of Inflated Expectations (see "Hype Cycle for Application Services, 2016") indicating proper caution and planning are required before embarking on this model as the overenthusiasm and sometimes unrealistic expectations push this too fast forward. Crowdfunding is best viewed as a complementary alternative to traditional service delivery for its testing requirements. Crowdfunding is still largely manual testing, which can be inefficient for areas where automation is particularly impactful.

The top five trends shaping the direction of the crowdfunding market are digital business, resource scarcity, localization, mobile apps and IoT. The near-term impact of these trends is described below.

Digital Business Transforms Demand for Testing Services

The IT department including quality managers will need to meet accelerated demand for speed as organizations move into digital business. Organizations are becoming bimodal to manage this challenge where Mode 1 is traditional and where more traditional testing services are better-suited. Mode 2, however, is exploratory, emphasizing speed and agility and where crowdfunding can be an effective piece of the sourcing strategy.

Crowdfunding when used in the correct context can be used to reduce cost through the flexibility of the model and payment mechanism such as paying for results. Crowdfunding can also be up and running in a matter of hours using large number of resources, therefore meeting the requirements for speed. It also addresses the end-user experience elements that are so critical in digital business.

Relevant Skills and Resources Are Scarce in a Fast-Moving Market

A crowdsourcing community can provide access to skills that are hard to find or where there is a temporary need for a particular specialized skill set. Skills such as performance and functional skills in mobile apps are scarce simply due to the speed of change in today's digital world and the wide range of devices, communication protocols and security requirements. The need for these skills is typically very short term in duration, sporadic and often unpredictable — but the need must be filled quickly due to the high demand for rapid deployment.

Crowdsourcers help to bridge skills gaps by providing access to a vast variety of skills. These skills can also be provided across various countries. To hire the equivalent resources and tap into the combined experience level of these individuals would be virtually impossible for any single organization to do. Crowdfunding also opens up opportunities for smaller organizations that due to limited size and budgets cannot retain internal staff levels nor use application testing service providers for their purposes.

Localization Testing and Providing Custom Demographics of Testers Are Valuable

Due to the nature of the tests performed through crowdtesting often being focused on external users or clients, there is heavy importance on who is actually conducting the tests. There often is a particular target market for an application, app or website, which can be related to age, interests, skills levels, country of residence, language spoken, experience in a particular field or any other requirement. Having testers that fit this description will allow the tests to be optimized. Providers create algorithms for their communities that enable them to find testers with all the characteristics that the client requires.

Mobile Application Testing Services Remain a Key Driver for Crowdtesting

The complexities of effectively testing mobile applications to a sufficiently high quality and standard were the low-hanging fruits for crowdtesting providers. While there is a shift in offerings and services away from mobile into other areas, mobile application testing still remains and will continue to be a very critical part of using crowdtesting services. The speed of change and adoption in today's world of mobile apps, as well as other digital technologies, is extremely high and it is hard for organizations to hire adequately skilled personnel for all their internal demands. Skills will continue to be scarce, especially around the cutting-edge technologies coming into the market.

Crowdtesting enables applications built on mobile technologies to be tested by real users using real devices and with multiple different software/hardware/network configurations.

Internet of Things Has the Potential to Drive the Use of Crowdtesting Further

The Internet of Things will pose additional challenges to organizations to test an IoT platform. These devices will be connected in multiple ways to a variety of platforms, which means increased complexity to the testing process. Organizations often need these tests performed "in real life" by testers that use their own devices in various situations to validate functionality and experience. If mobile represents complexity, then IoT is even more so with the variety of devices interacting with the outside world as well as with each other — how a particular app in a device will interact with another app in another device, for example. Some of these permutations are also difficult to test in a lab environment, and it is here where crowdtesting can be an alternative. Where IoT interacts with or is applied by consumers, crowdtesting can be used.

Crowdtesting could include testers performing transactions through mobile wallet apps in a retail store to validate the application functionality and the customer experience, testers utilizing IoT solutions in their home reporting issues back to manufacturer or testing how mobile applications interact with smart cars.

Market Analysis

There are thousands of crowdsourcing communities on the internet. However, only selected communities offer application testing services. Gartner estimates the total amount of crowdsourcing companies that deliver crowdsourced, community-based, vetted and managed application testing

services to be around 30 worldwide — this is growing from our estimate of less than 20 in last year's iteration of the report.

The crowdtesting market is expanding further as a result of many of the larger service providers that offer application services and testing are building up their crowdtesting offerings. In many cases, they have already created their own crowdsourced communities to deliver internal crowd-based services, using resources that are on the bench and therefore available for additional work. Simultaneously, providers are building up their external crowdtesting capabilities by mostly partnering with crowdtesting companies. This way, their clients get access to this model without having to manage the process of using a crowdtester themselves.

Some of the key benefits and limitations of the crowdtesting model are summarized below.

Benefits:

- Access to scarce and specialized skills.
- Ability to test in various geographies, with different languages, on different devices, platforms, and within selected demographics or target markets.
- Payment based on what you use, bugs found, test cases executed, devices verified or outcomes produced.
- Flexibility, speed and scalability.
- Measuring real or at least realistic consumer experience and satisfaction.

Limitations:

- Security and IP ownership.
- Intensity of the governance and management of the crowd.
- Integration of crowdtesting results across multiple contests and assignments and with other applications or environments.
- Compared to traditional testing offerings, there is less automation, a lack of common toolsets, a lack of reuse and a potential lack of continuity in resources working on projects.

Possible Use Cases

For organizations to successfully use crowdtesting, they need to consider two models:

- Control a crowdsourced community themselves when they have well-defined testing objectives and are able to translate their objectives into contests or assignments that can be run against a crowdsourced community. Organizations should also be able to verify and validate the results by individual contest, across contests and within the wider platform where the results are used. This implies the inclusion of a crowd curator by the organization (see "Pilot the Use of Crowdsourced Communities for Application Development to Achieve Agile Innovation").

- Use a crowdsourcing company or service provider that provides the crowd control services and manages all interactions, verification and validation, and integration of results.

Crowdtesting services can address multiple use cases:

- Requests can be made to have test cases written by the crowd based on business requirements.
- A crowd can review requirements for completeness — both functional as well as nonfunctional — consistency and the ability to realize the defined test objectives. Such a static review is often ignored, while many defects are injected at the beginning in the requirements.
- Defined test cases can be manually tested.
- There can be benefits from specialized vetted crowdsourced communities in addition to existing test partners, especially for security and localization testing.
- Although not recommended, the services can simply be used as a way of supplementing internal testing needs by having additional "bodies" to test.
- An automated testing contest can be requested, where test cases are defined for the creation of unit tests, which can then be brought back for integration before the regression testing phase.
- A bug-finding contest can be launched to find bugs in new apps in the production phase. This can either be done based on defined test cases or through exploratory testing.
- Small or midsize businesses (SMBs) can have the opportunity to access skills without engaging in a large project beyond their capacity.
- Crowdtesting services can be used as an additional "safety measure" for the normal quality process to ensure all possible issues are covered before the go-live.

There are various considerations when selecting a crowdsourced testing model discussed in the previous version of this research (see "Market Guide for Crowdsourced Application Testing Services"); a table in that document describes in more detail the difference in terms of definition, benefit and risk between the following different models of using the crowd for testing:

- Service provider offering
- Crowdtesting controlled by crowdsourcing company — vetted communities
- Crowdtesting controlled by crowdsourcing company — unvetted communities
- Crowdtesting controlled by client — vetted
- Crowdtesting controlled by client — unvetted

Market Models

Crowdsourcers are starting to offer more categories of testing, although most common are still functional testing and mobile testing and these areas have most client usage. Localization testing is an area where the crowd is very useful in reaching the correct local target market. In the future, more demand is expected around IoT testing (where IoT interacts with consumers). To view the different definitions of test types, see "Improve Software Quality by Understanding Software Testing Types."

Table 1 lists key categories of testing offered by crowdtesting providers. The full service providers are not included in the table since they have full testing practices alongside their crowdtesting offerings.

Table 1. Key Testing Categories Offered by Pure-Play Crowdtesting Providers

| Service Provider | Functional Testing | Internet of Things Testing | Load Testing | Localization Testing | Mobile Testing | Usability Testing | Security Testing |
|---------------------------------------|--------------------|----------------------------|--------------|----------------------|----------------|-------------------|------------------|
| 99tests | Yes | No | No | Yes | Yes | Yes | Yes |
| Applause | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Base2 (Crowdtest) | Yes | Yes | Yes | No | Yes | No | No |
| Bugcrowd | No | No | No | No | No | No | Yes |
| BugFinders | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cobalt Labs (formerly CrowdCurity) | No | No | No | No | No | No | Yes |
| Crowdar | Yes | No | Yes | No | Yes | No | No |
| Crowdsourced Testing | Yes | No | No | Yes | No | Yes | No |
| crowdsprint (a Revolution IT company) | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Global App Testing | Yes | Yes | No | Yes | Yes | Yes | Yes |
| Lionbridge | Yes | Yes | No | Yes | Yes | Yes | Yes |
| Mob4Hire | No | No | No | No | Yes | No | No |
| passbrains | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| PeoplePerHour | Yes | No | No | No | No | No | No |
| Rainforest | Yes | No | No | No | Yes | Yes | No |
| Synack | No | Yes | No | No | Yes | No | Yes |
| Testbats | Yes | No | No | No | Yes | Yes | No |
| Testbirds | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| test IO | Yes | Yes | No | Yes | Yes | Yes | Yes |
| Ubertesters | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

| Service Provider | Functional Testing | Internet of Things Testing | Load Testing | Localization Testing | Mobile Testing | Usability Testing | Security Testing |
|------------------|--------------------|----------------------------|--------------|----------------------|----------------|-------------------|------------------|
| we-test.com | Yes | Yes | No | Yes | Yes | Yes | No |

Source: Gartner (October 2016)

Representative Providers

The vendors listed in this Market Guide do not imply an exhaustive list. This section is intended to provide more understanding of the market and its offerings.

The information provided per vendor reflects the vendor's responses to a Gartner survey and has been verified where possible.

Vetted Communities

Vetted communities have selected individuals whose credentials are verified by the crowdsourcing firm and individuals with the required expertise are selected for contests. See Note 1 for further definitions. Some providers in this category, listed in alphabetical order, also offer unvetted services.

The size per community is an estimate and reflects the size per June 2016.

99tests

<https://99tests.com>

Headquartered: India

Size of vetted community: 21,000

Unvetted service also: Yes

Regions where community members are based: North America, EMEA, Latin America and Asia/Pacific

99tests is an online crowdtesting platform with testers in 150 countries. Its client base includes India, North America, Europe and Australia. 99tests focuses on device coverage and real-world customer experience and aligns with any development process. The provider offers services in all types of functional testing and specializes in usability and localization testing involving major European and Eastern European languages. Web, mobile and enterprise testing services are part of its portfolio.

Applause

www.applause.com

Headquartered: U.S.

Size of vetted community: 258,000

Unvetted service also: Yes (upon client request)

Regions where community members are based: North America, EMEA, Latin America and Asia/Pacific

Applause is the largest crowdtesting provider today. The company changed its original name from uTest to Applause in 2014 while keeping the uTest name for its tester community platform. At the time of its rebrand, it also acquired Testhub, a German crowdtesting company. Applause works with clients of varying sizes, although it increasingly works with enterprise-size companies where engagements often include improving the quality of public-facing digital experiences. Particular industry sweet spots include retail, banking and insurance, media, and travel in areas such as customer experience, omnichannel and localization as well as payment transaction validation.

Applause offer its clients an on-demand integrated, holistic approach to testing including software tools to provide value and minimize overhead throughout the clients' entire software development life cycle (SDLC). Client management, technology management and test implementation are available in delivery.

Base2 (Crowdtest)

www.base2.com.br

Headquartered: Brazil

Size of vetted community: 15,000

Unvetted service also: No

Regions where community members are based: Latin America

Brazil-based Base2 focuses on the Latin America markets. It offers a vetted service where its community testers get paid on discovering bugs. Its vetted community crowdtesting services are delivered through its Crowdtest entity, a community controlled by Base2 testing experts. Base2 also delivers more traditional testing services where it can integrate Crowdtest's capabilities, such as a testing factory service. The priority of Base2 is to offer test-packaged solutions to improve payment transparency for clients and to also offer a self-service approach.

Bugcrowd

<https://bugcrowd.com>

Headquartered: U.S.

Size of vetted community: 31,000

Unvetted service also: Yes

Regions where community members are based: North America, EMEA and Asia/Pacific

U.S.-based Bugcrowd focuses on cybersecurity with a range of managed bug bounty program options, including on-demand and private security testing programs based on specific requirements. With Bugcrowd, clients can select to access the whole crowd or select individual testers in a private program. Clients use the Bugcrowd platform to manage their programs, and benefit from automated triage of bug submissions and validation of bugs by security engineers. Bugcrowd focuses on client segments from midmarket to enterprise and can engage clients in the short term or the long term. Sweet spots for Bugcrowd include web application security assessment, mobile application testing, infrastructure security assessment, penetration testing, IoT security assessment and automotive security assessment.

BugFinders

www.bugfinders.com

Headquartered: U.K.

Size of vetted community: 55,000

Unvetted service also: No

Regions where community members are based: North America, EMEA, Latin America and Asia/Pacific

BugFinders delivers a fully managed solution for wide coverage crowdtesting, with a vetted global community spread across more than 100 countries. BugFinders focuses on retail, e-commerce, banking and financial services. The model uses a minimum of 70 testers and up to 300 or more testers working on a single project in order to bring further depth and breadth of coverage and faster turnaround times for clients. All bugs are "retested" to ensure they are valid.

Crowdar

www.crowdaronline.com

Headquartered: Argentina

Size of vetted community: 2,720

Unvetted service also: Yes

Regions where community members are based: North America, EMEA and Latin America

Crowdar's main expertise is localized in Latin America. The primary focus of the company is enterprise clients and the fintech industry. Projects are delivered using agile methods where teams can be set up quickly. Crowdar has a heritage of skills in automation with different platforms and

frameworks and can build automation framework for clients. The company can test software during the development process or after that, either with professional testers or individuals from its crowd, depending on requirements. The individuals working for the client will be managed by a quality assurance (QA) manager.

Crowdsourced Testing

www.crowdsourcedtesting.com

Headquartered: Canada

Size of vetted community: 43,500

Unvetted service also: Yes

Regions where community members are based: North America, EMEA and Asia/Pacific

Founded in 2013, Crowdsourced Testing has a community of testers across 177 countries consisting of individuals with six years of experience as full-time testers on average. The vetting process consists of testers submitting their curriculum vitae or résumé and being continuously reviewed on how they perform their work. Engagements with the crowd can either be self-service or managed where users receive assistance on building test plans and are offered a fully managed QA team. There are standard packages available based on selected devices, browsers and operating systems, and these can also be customized.

The provider has internal employees that manage the work performed by the crowd of testers, performing reviews and ensuring clients get valid results. Testers are not chosen by clients but rather by an algorithm that automatically selects the most suitable testers for each project, based on each individual engagement.

crowdsprint (a Revolution IT company)

<http://crowdsprint.com>

Headquartered: Australia

Size of vetted community: 13,000

Unvetted service also: Yes

Regions where community members are based: North America, EMEA and Asia/Pacific.

The crowdsourced testing business of Revolution IT known as crowdtest was rebranded in September 2016 to crowdsprint.

Crowdsprint primarily focuses on large enterprise customers within the following industries: retail, e-commerce, media, entertainment, financial services, travel, telecommunications, public sector and

utilities where engagements often focus on public-facing digital applications on the web, mobile and cloud.

Crowdsourced communities are under control of crowdsprint platform specialists, who screen testers as part of the process before allocating them to client projects and test cycles. They also ensure that the crowd community testing fits within the client's way of testing to minimize overhead at the client side. Crowdsprint has a dedicated delivery management team and a governance framework in place for clients where the delivery managers take full accountability for the deliverables to customers.

Crowdsprint organizes testers at five different levels of vetting, three levels of confidentiality agreements and nine levels of security measures with the aim of protecting customer intellectual property and improving security.

Global App Testing

www.globalapptesting.com

Headquartered: U.K.

Size of vetted community: More than 20,000

Unvetted service also: No

Regions where community members are based: North America, EMEA, Latin America and Asia/Pacific

Global App Testing (GAT) has a community of testers across 84 countries, composed of developers, freelance QAs or full-time QAs who test in their free time. GAT searches and recruits skilled testers who need to pass prequalification tests. The company also meets and connects with top testers through local meet-ups and "Testathon" events. Local testers can attend the GAT University Training Program on QA practices. GAT is the founder of the global Testathon community (hackathons for testers) and has run Testathon events with its testing crowd in multiple countries, including Nigeria, India, South Africa, Sweden, the U.S., the U.K. and Romania.

Lionbridge

www.lionbridge.com

Headquartered: U.S.

Size of vetted community: 150,000

Unvetted service also: Yes

Regions where community members are based: North America, EMEA, Latin America and Asia/Pacific

The sweet spot of Lionbridge consists of large scale, global programs for global products and machine learning with in-country resources across 102 countries. Examples include simultaneous testing of global products in personalized mobile and social contexts for function and usability; audio transcription, annotation and computational linguistics for speech and text interface development and enhancement; and human-machine interface testing for automotive environments. Lionbridge offers a managed service program on client testing and data capture platforms and uses its proprietary cloud-based technology platform, The Smart Crowd, which consists of prequalified individuals to provide its crowdsourcing solution.

Passbrains

<http://passbrains.com>

Headquartered: Switzerland

Size of vetted community: 45,000

Unvetted service also: Yes

Regions where community members are based: North America, EMEA, Latin America and Asia/Pacific.

Passbrains, formerly PASS Group, provides a digital business assurance and crowdtesting solution through its platform, which is equipped with community management, test management and survey tools. Passbrains provides access to vetted communities under control of passbrains test managers and also supports management of private communities, such as consumers or employees of passbrains customers. The passbrains platform supports market insights, ideation, prototype evaluation, user experience studies and testing of devices, software and processes. Passbrains is actively promoted as a white-label platform solution for enterprises and service providers, besides providing managed digital business assurance and crowdtesting services directly to the market. The primary industries the provider works with include telecom, media and entertainment, retail, travel, and financial services.

Rainforest

www.rainforestqa.com

Headquartered: U.S.

Size of vetted community: 56,000

Unvetted service also: No

Regions where community members are based: North America, EMEA, Latin America and Asia/Pacific.

Founded in the U.S. in 2012 and currently headquartered there, Rainforest offers a different version of using the crowd for testing. All customers are on annuity contracts based on usage in a SaaS model. Clients get access to its platform to manage, get reporting on and execute QA tests. The testers are all certified on the Rainforest platform, but customers do not interact with nor see the testers; the crowd is a layer in its architecture. There is no need for testers to be highly skilled; anyone can carry out tests even without proprietary knowledge. Testers get access to several virtual machines that allow them to emulate browsers. Rainforest focuses on companies sized from 50 to 5,000 people, software vendors and/or U.S.-based contracts typically exceeding \$100,000. Industries include e-commerce, education and fintech.

Synack

www.synack.com

Headquartered: U.S.

Size of vetted community: Less than 500

Unvetted service also: No

Regions where community members are based: North America, EMEA and Asia/Pacific

Synack combines vetted ethical hackers (present in 37 countries) — which it calls "researchers" — with automation to identify exploitable vulnerabilities and indicate how to resolve them. Synack offers a vulnerability analytics platform by which clients can continuously track and trace all researcher actions. This platform also includes automation to give clients the ability to check their applications against known vulnerabilities. Synack researchers document and communicate any identified exploitable vulnerability and provide the steps to reproduce it as well as the required resolution. Researchers follow up to verify if the vulnerabilities have been resolved.

Testbats

www.testbats.com

Headquartered: Netherlands

Size of vetted community: 41,000

Unvetted service also: No

Regions where community members are based: North America, EMEA, Latin America and Asia/Pacific

Testbats' community of testers is spread across more than 130 countries. The company specializes in testing and offers various models to its clients, from unvetted access to the crowd to models with dedicated lead testers and volume advantages for clients with more recurring testing requirements.

Testbirds

www.testbirds.com

Headquartered: Germany

Size of vetted community: 170,000

Unvetted service also: Yes

Regions where community members are based: North America, EMEA, Latin America and Asia/Pacific

Testbirds was founded in Germany in 2011 and initially offered only functional testing; however, its portfolio has since expanded. The company has offices in the Netherlands, the U.K., Budapest, Hungary, Moscow, Russia, and Sweden but its clients are worldwide. The testers in the Testbirds community are in more than 193 countries.

Testbirds offers clients three different service levels depending on testing needs. The service levels range from self-service (where clients design their own tests) to self-service plus and managed services that come with full support from Testbirds' project managers.

The company also has an in-house-developed test infrastructure solution called "TestChameleon," where automated and manual tests can be performed on virtual machines for clients in the cloud.

"BugAbility," a combination of functional and usability testing, is one of the services Testbirds offers in addition to its testing platform as white-label solutions. These tests are overseen by a team of project managers that evaluates results and provides recommendations for improvement.

Ubertesters

www.ubertesters.com

Headquartered: U.S.

Size of vetted community: 20,000

Unvetted service also: Yes

Regions where community members are based: North America, EMEA, Latin America and Asia/Pacific

Ubertesters offers clients the access to its platform — a cloud-based, process management tool for mobile application beta testing — to manage the in-house QA team and internal processes. The crowdtesting service includes an assigned project manager who handles the entire test cycle and provides a single point of contact for the client to reduce management overhead. Ubertesters' model is simply to charge clients per net hour of testing of a tester with device. This model is enabled and tracked through the QA management platform that monitors the tester's activity.

Ubertesters relies on its QA management platform, a SaaS platform that can help clients manage their entire QA cycle (including their own in-house community).

Unvetted Communities

With unvetted communities, the client uses resources in a crowd, but the individuals are selected by their responses to contests; their credentials are not verified by the crowdsourcer. See Note 1 for further definitions. Vendors are listed below in alphabetical order. Also, some of the below providers also offer vetted services.

Cobalt Labs (formerly CrowdCurity)

www.cobalt.io

Headquartered: U.S.

Size of unvetted community: 4,500

Vetted service also: Yes

Regions where community members are based: North America, EMEA, Latin America and Asia/Pacific

Cobalt Labs recently changed its name from CrowdCurity. The company offers security testing services and primarily targets midsize organizations (200 to 2,000 employees) with deal sizes ranging from \$15,000 to \$150,000, within the areas of SaaS, healthcare and payments as well as SaaS businesses in the U.S. and Europe. Cobalt Labs aligns itself with agile and DevOps development approaches and is based on its cloud platform.

Mob4Hire

www.mob4hire.com

Headquartered: Canada

Size of unvetted community: 65,000

Vetted service also: No

Regions where community members are based: North America, EMEA, Latin America and Asia/Pacific

In 2007, Mob4Hire was one of the first crowdsourced providers to enter the market. Mob4Hire's community spans more than 185 countries and is entirely focused on mobile application testing and mobile marketing. The Mob4Hire platform allows enterprises to create and access a "white-labeled version" of a Mob4Hire community for their own use, network or app store. The client will independently submit a competition to its community of testers.

PeoplePerHour

www.peopleperhour.com

Headquartered: U.K.

Size of unvetted community: Not known

Vetted service also: No

Regions where community members are based: North America, EMEA, Latin America and Asia/Pacific

PeoplePerHour is an unvetted portal where clients will post a job on the website and manage the process themselves. The community also lets freelancers post "hourlies," which are essentially bite-sized jobs, such as "one hour of a particular service" that will be offered and which clients can browse and purchase. This community consists of resources across 188 countries, but its testing and software testing resources are only a small part of other types of services offered, such as writing, translation, business support and admin.

test IO

www.test.io

Headquartered: U.S.

Size of unvetted community: 20,000

Vetted service also: No

Regions where community members are based: North America, EMEA, Latin America and Asia/Pacific

Test IO, founded in 2011, was recently renamed from testcloud to test IO. The testers in the test IO community go through a qualification process and receive regular feedback and evaluations; they also sign a nondisclosure agreement. The testers represent a variety of demographics and countries worldwide. The work performed by testers is also vetted before it goes to customers. Most of test IO's revenue comes from subscriptions where customers pay a monthly fee and then can run as many tests as they want.

we-test.com

www.we-test.com

Headquartered: Israel

Size of unvetted community: Not known

Vetted service also: No

Regions where community members are based: North America, EMEA, Latin America and Asia/Pacific

We-test.com is a global community founded in 2014 that offers on-demand crowdtesting. The company has developed a platform and technology that clients can gain access to immediately find suitable testers to validate products on various platforms or devices. Rates are fixed per hour, per tester, starting from a fixed rate.

Full Service Providers

A growing number of traditional testing service providers also provide crowdtesting services. The two ways for service providers to offer crowdtesting services are to partner with a crowdsourcer in the marketplace and to use its bench of resources internally to carry out specific crowdtesting tasks. Examples of providers that offer crowdtesting services include Accenture, Cognizant, IBM, Infosys, QualiTest, SQS, Tech Mahindra and Wipro. For further details on these application testing service providers and others, see "Magic Quadrant for Application Testing Services, Worldwide."

For example, Accenture leverages crowdtesting with its clients using partnerships with Applause and others. Accenture particularly utilizes the crowd where specialist niche skills are needed. It has also created a solution of enterprise-level crowdtesting services for mobile apps, supported through automated record and replay through Accenture's proprietary platform. For QualiTest, crowdtesting is part of its overall service offering and is integrated into its blended delivery model. QualiTest offers a managed crowd approach, where it is responsible end-to-end though it is still transparent to the client. QualiTest partners with several crowdsourcing partners including Applause. Wipro has launched a QA-as-a-service platform that allows clients to try a variety of services across testing, including leveraging an internal and external crowd ecosystem. Wipro uses an internal platform to connect in-house employees and thereby leveraging expertise fast. Internal and external partners come together on the same platform.

Market Recommendations

For the testing and quality requirements of an organization today, crowdtesting is not sufficient because the requirements are moving more to offerings of end-to-end business process application testing services with an expectation that testing services will be directly linked to the effectiveness of a business process and not an individual application. However, crowdtesting is a valuable complementary service to use as part of a thorough quality focus on applications, as it can be a good option for the final stages of software testing, filling a need for mobile or emerging technology testing or providing cost and time efficiencies to particular parts of a requirement.

The crowd provides value at testing specific parts of an application that has been outlined and broken out by the client, and not by looking at the application as a whole or how it is working within the business process. Therefore, crowdtesting is very good for consumer-facing testing, such as how the application will be used by any number of individuals and how well it is all working behind the scenes. The service can be turned off and on at the client's discretion; a global community is

enlisted through crowdsourcing to test applications and services on multiple platforms in multiple geographies, then its enlistment is terminated once the testing requirements have been met.

Gartner Recommended Reading

Some documents may not be available as part of your current Gartner subscription.

"Magic Quadrant for Application Testing Services, Worldwide"

"Market Trends: Application Testing Services Must Address the Shift to Digital Business Requirements"

"Hype Cycle for Application Services, 2016"

"Pilot the Use of Crowdsourced Communities for Application Development to Achieve Agile Innovation"

"Harnessing a Global Talent Pool Through Crowdsourcing Can Increase Speed and Deliver Innovation"

"Use Crowdsourcing as a Force Multiplier in Application Development"

Evidence

The writing of this document is informed by:

- **Primary research** — A vendor survey covering revenue, number of vetted and unvetted resources, geographic coverage, types of tests offered, and other relevant information.
- **Primary research** — Gartner inquiries with user organization clients. Gartner analysts collectively took 170 crowdsourcing-related inquiries with end-user clients during the last 12 months (September 2015 through September 2016).
- **Primary research** — Vendor briefings with some participating service providers in the Market Guide.
- **Secondary research** — Press releases and publicly available information, including company websites and financial reports.

Note 1 Application Testing Services

"Application testing services" is a comprehensive term used to capture all types of verification and validation services for the purposes of supporting clients' application quality control and quality assurance (QA). Verification assesses the technical behavior, and validation assesses the functional behavior of tested elements. For a detailed description of testing services, see "Testing Services: Guidelines for Understanding and Using Testing Service Key Terms and Definitions."

Crowdsourcing is a sourcing delivery option that uses cloud technology and models to leverage the collective skills and knowledge of a broad network of people (the "crowd" — a group of self-nominated individuals vying for opportunities to work on crowdsourced challenges) to produce solutions to IT and business problems. It offers an alternative to using in-house resources, outsourcing or staff augmentation. This model adds a new dimension to the hybrid IT resource environment: insourcing, outsourcing, cloud sourcing (consuming capabilities "as a service"), and its cloud-enabled "progeny," crowdsourcing.

Crowdtesting application services are delivered through crowdsourced communities. A crowdsourced community is a group of individuals selected from a crowd under the control of a crowdsourcing firm. The term "community" refers to the concept of a group of individuals interacting in a shared and controlled environment to achieve a defined result. It implies that the individuals are all familiar with the crowdsourcing process and with their roles and responsibilities within the crowdsourcing exercise, both individually and in relation to their peers within the community. It also implies the use by the crowdsourcing firm of collaboration platforms and integration tools to control the community and deliver the defined result.

Crowdsourced Communities

There are only a limited amount of companies that offer crowdtesting services either through vetted or unvetted communities (see "Pilot the Use of Crowdsourced Communities for Application Development to Achieve Agile Innovation").

There are two main categories of crowdtesting services — vetted communities and unvetted communities, and there are also full service providers offering crowdtesting. These are explained below.

Vetted Communities

By using vetted communities or crowds, clients get additional wraparound security. Individuals selected for these communities have the required expertise, and their credentials are verified by the crowdsourcing firm that selects individuals for contests. Or when clients are mature themselves, they can create a vetted community. This action would imply the company has a dedicated approach to crowdsourcing, as it requires active engagement and management of the vetted community.

The aspects where a client might need to compromise using a vetted community include potentially ending up with less potential resources and a smaller crowd, as well as an increased price attached to the governance work from the crowdsourcing provider or their internal additional overhead.

Some providers in this category also offer unvetted services.

Unvetted Communities

With unvetted communities, the client uses resources in a crowd, but the individuals are selected by their responses to contests; their credentials are not verified by the crowdsourcer. The client will get access to a crowd, but after the requirements have been set and the contest launched. The onus is

on the client to select individuals; the crowdsourcing company only provides access. Alternatively, the client works with a crowdsourcing company to control the community but without any upfront verification of credentials.

Using unvetted communities means a potentially broader span of resources will be engaged on the project or contest, but it also means less security and more of an effort from the client to manage the contest. Unvetted communities could prove beneficial for exploratory and usability testing.

Full Service Providers

Service providers that offer more traditional services such as implementation and outsourcing can also offer crowdtesting services to their clients. This model of crowdsourcing presents less risk to clients, as they are using the service through the professional services company that can govern, manage and guide them through the process. Crowdtesting by a service provider would likely be offered as a portion of the project and not as a stand-alone or even as a defined offering. Therefore, the provider would already be familiar with the clients' environments and needs.

Essentially, there are two ways for service providers to offer crowdtesting services:

- The provider will partner with a crowdsourcer in the marketplace. The client will then get access to these crowd communities, albeit with the contract and management of the deal being provided by the service provider. The service provider will also carry the responsibility toward the client to manage the requirements, manage the contests, verify and validate contest propositions, control the execution, validate results, and verify results and integration across contests and into the client's application landscape.
- The provider will use its bench of resources internally to carry out specific crowdtesting tasks. These could be resources that are not dedicated to projects, testing experts that support short-term assignments within the provider, and technically skilled resources but not testing experts. This is beneficial to the provider, as internal resources that are probably more highly skilled can be put to use when not engaged on client projects. It also simplifies the process for the client, as all process steps are completely under control of the service provider. Also, all the resources used for the crowdtesting services are known, and the service provider can carry out complete delivery risk and responsibilities.

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