

# The Forrester Wave™: Global Continuous Testing Service Providers, Q1 2019

The Nine Providers That Matter Most And How They Stack Up

by Diego Lo Giudice

January 23, 2019 | Updated: January 30, 2019

## Why Read This Report

In our 29-criteria evaluation of global continuous testing (CT) services providers, we identified the nine most significant ones — Accenture, Capgemini, Cognizant Technology Solutions, DXC Technology, IBM, Infosys, NTT DATA, Tata Consultancy Services (TCS), and Wipro — and researched, analyzed, and scored them. This report shows how each provider measures up and helps application development and delivery (AD&D) and QA professionals make the right choice.

## Key Takeaways

### **Accenture, Tata Consultancy Services, Wipro, And IBM Lead The Pack**

Forrester's research uncovered a market in which Accenture, TCS, Wipro, and IBM lead the pack. Capgemini, Cognizant Technology Solutions, Infosys, and NTT DATA offer competitive options. DXC Technology is a Contender.

### **AD&D Pros Want To Deliver Faster Without Sacrificing Software Quality**

The market for CT services is growing as more AD&D professionals see it as a way to address the quality-at-speed challenges that come with continuous delivery. They increasingly trust CT service providers to act as strategic partners in their continuous delivery transformation.

### **AI And ML Accelerators, Automation Augmentation, And Talent Are Differentiators**

As organizations transition their development and testing teams to continuous delivery, traditional testing services no longer suffice. New consulting practices and processes — exploratory testing, test-driven development (TDD), intelligent automation and optimization, system verification test (SVT) and test data management (TDM) services, artificial intelligence (AI) and machine learning (ML) accelerators — along with an ambitious vision for the future of testing — will dictate which providers keep leading the pack.

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## The Nine Providers That Matter Most And How They Stack Up



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### Related Research Documents

[The Forrester Wave™: Continuous Testing Service Providers, Q3 2017](#)

[The Forrester Wave™: Omnichannel Functional Test Automation Tools, Q3 2018](#)

[How Developers Deploy Test Automation To Enable Continuous Software Delivery](#)

[The Path To Autonomous Testing: Augment Human Testers First](#)

[Vendor Landscape: Continuous Testing Services For Agile And DevOps Environments](#)



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## Want To Deliver Continuously? You Have To Test Continuously

Digital disruptors and customer-obsessed organizations are improving customer experience (CX) by shortening their software delivery cycles, delivering features in smaller increments, and scaling their existing Agile processes in concert with DevOps. Traditional testing services don't cut it for these organizations: 20 of 25 reference customers told us that they are adopting CT services to support their Agile and DevOps initiatives within a digital transformation journey. Of those CT services, broadly speaking, clients say automation is the most impactful and differentiating for delivering better software faster (see Figure 1). More specifically:

- › **End-to-end automation is vital.** Overall, customers identified functional test automation and nonfunctional testing, which includes test data management and shift-left performance testing, as the most impactful set of services for CT. More than two-thirds of them cited functional test execution automation (either UI-led, data-driven, or API-led) as the most impactful automation service. They also frequently mentioned that service virtualization for automated integration testing, test-driven/behavior-driven development, and functional test design automation were helpful.
- › **TDM gains traction.** Clients we interviewed were markedly more interested in TDM services compared to those in our 2017 evaluation of midsize providers in 2017.<sup>1</sup> Why? End-to-end CT requires self-service, fast-life-cycle updates of secured test data. A strong testing process won't produce strong quality if you don't feed it the right data at the right time. We are seeing a resurgence of TDM lately, but a flourishing new technology and new players like Datical, DATPROF, GenRocket, and Orson are disrupting the TDM status quo.<sup>2</sup>
- › **Shift-left performance testing comes on strong.** Digital, mobile, and internet-of-things (IoT) software all increase the need for early performance testing; so far, just a sliver of customers understand that. Shift-left means running performance tests as early as possible during development to ensure designs and components work — many also call this “unit” or “local” performance testing. It provides developers with dedicated monitoring tools to give them insights early in development about how features and minimum viable products (MVPs) will behave once deployed in production. We saw a significant uptick in client inquiries around this topic in 2018.
- › **AI and ML learning appear all over testing.** Most of the service providers have been experimenting and embedding AI into their testing accelerators and platforms. Use cases are broad, but some are more ready to use than others.<sup>3</sup>

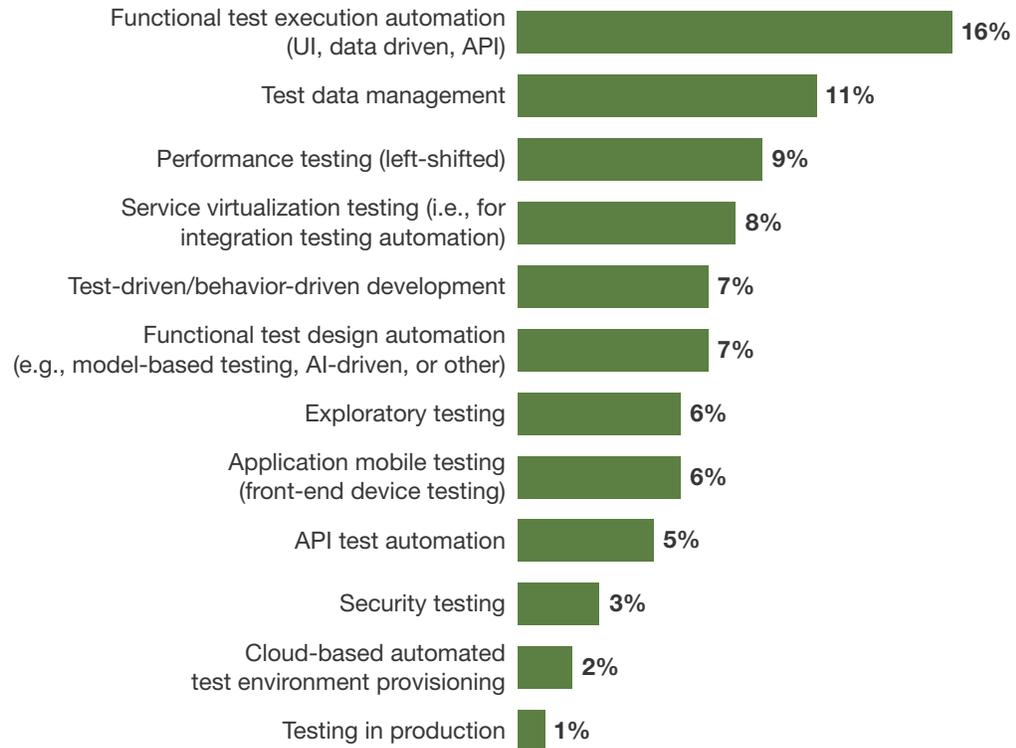
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**FIGURE 1** The Most Impactful CT Services

**“Assuming an Agile and/or DevOps context for software development, please select the three most impactful and differentiating CT services your vendor has provided that have enhanced your ability to deliver better software faster.”**

(Multiple responses accepted)



Base: 25 business leaders provided by the evaluated vendors in this Forrester Wave

Source: Forrester's Q1 2019 Global Continuous Testing Service Providers Forrester Wave™ Customer Reference Online Survey

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**Most CT Services Customers Still Fall Short Of Their Automation Aspirations**

Our definition of CT services was the starting point for our evaluation.<sup>4</sup> Automation is one of the most important factors for successful continuous testing, and we measured CT providers in terms of practices, process, and accelerators — and, critically, talent. We also asked about automation in our survey of reference clients: To better understand where they stood on automation, we asked what level of functional test automation they had achieved, how functional test automation coverage had improved in the last 12 months, what level of nonfunctional automation they had achieved, and how nonfunctional automation testing coverage had improved in the last 12 months, all as a result of vendors' services. In a nutshell, we found:

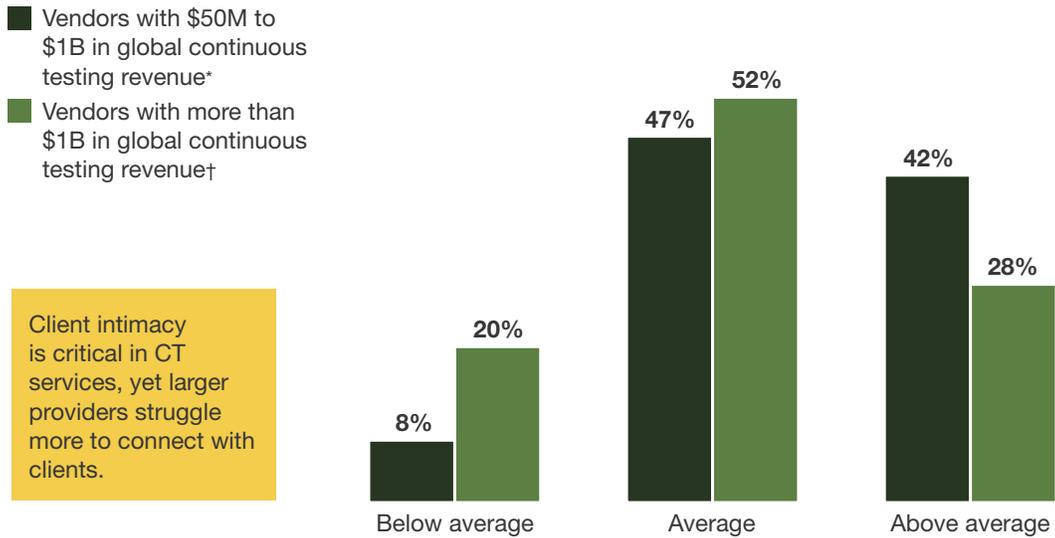
- › **Performance automation lags functional automation but is catching up.** In the last 12 months, more than a half of the customers had more than 50% coverage of functional test automation, while less than half had achieved that for performance testing automation.
- › **Automating more than 80% is the goal, but only 3 out of 25 get there.** The rule of thumb: For Agile teams to deliver software frequently, say within two weeks of sprints, they must automate more than 80% of their manual test cases. Many are on the journey to get there, since more than half of the reference customers automate more than 50% of their functional test cases.
- › **Most customers are nevertheless happy with their CT service providers.** Client experience is what really matters for customers choosing a CT service provider. We asked reference users about client intimacy, the quality of interactions with vendor employees, the quality of the employees allocated to projects, and their approach to solving problems. Generally speaking, the customers scored their vendors favorably. To decrease the potential bias of each client for its vendor, we did a relative comparison that positioned all vendors as above average, average, or below average within the peer group (see Figure 2). However, comparing client intimacy ratings between clients of the smaller CT providers we evaluated previously with the global providers here shows that smaller is better — on this dimension, at least.<sup>5</sup>

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**FIGURE 2** Clients Of Global SPs Are Happy With Overall Experience, But Clients Of Smaller SPs Are Happier

**“How would you rate the vendor’s client intimacy/experience?”**



\*Base: 25 business leaders provided

†Base: 38 business leaders provided

\*Source: Forrester’s Q1 2019 Global Continuous Testing Service Providers Forrester Wave™ Customer Reference Online Survey

†Source: Forrester’s Q3 2017 Continuous Testing Service Providers Forrester Wave™ Client Reference Survey

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## Navigating The Landscape Of Continuous Testing Service Providers

The CT services market is quite broad and dominated by the large vendors we've evaluated here, which have been in the testing space for years. The mid-tier providers we've evaluated previously have revenue between \$50 million and \$1 billion. Below them, a wealth of new and smaller organizations range from smaller consulting boutiques with sales below \$10 million to consultants and smaller systems integrators with \$10 million to \$50 million in annual revenue.<sup>6</sup> As the CT services market grows, it shows:

- › **Slowing growth among the big players.** Many of the large testing service providers (those with more than \$500 million in revenue — and particularly those with over \$1 billion) are struggling to maintain the double-digit growth they're accustomed to. The largest vendors are on multiyear transitions from traditional manual testing services to CT and automation — all within an Agile transformation. At most of these vendors, new CT services are not growing fast enough to offset the decline in older manual services. In addition, as Agile and DevOps increasingly take hold, outsourced development services tend to embed and integrate testing rather than offer and report it as an independent service line.
- › **Dynamism among small to midsize providers.** Many vendors, especially those under the \$500 million mark, are more dynamic, growing at double-digit-or-higher rates and demonstrating strong client intimacy. Some also have respectable scaling capabilities. Smaller shops below \$50 million that have innovative testing accelerators, native automation techniques, and AI-based features are popping up like mushrooms: Examples in this category are 3Pillar Global, Aspire Systems, Birlasoft, Ciklum, CSS Corp, Luxoft, Maveric Systems, Ness Digital Engineering, Quinnox, Qentelli, Tavant Technologies, Tieto, Virtusa, and WillowTree.
- › **Further blending of software-plus-services.** Crowdsourced testing, sometimes called real testing, is a growing trend for mobile and IoT applications that increasingly require evaluating the full digital and physical experience in situ. Providers like Applause App Quality, Testbirds, and Ubertesters blend testing capabilities with software testing platforms to provide CT services in a new way — and they're proving quite effective, especially for user and usability testing for web-based apps. We are monitoring this area closely to decide whether to add criteria to future CT evaluations or dedicate a separate evaluation to it.

## Continuous Testing Services Providers Evaluation Overview

To assess the state of the CT service market and see how the vendors stack up against each other, Forrester evaluated the strengths and weaknesses of the top global CT service vendors. After examining past research, user need assessments, and vendor and expert interviews, we developed a comprehensive set of evaluation criteria. We evaluated vendors against 29 criteria, which we grouped into three high-level buckets:

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- › **Current offering.** We evaluated the types and breadth of CT consulting services each vendor offers, its adaptability to integrate in development teams, and its ability to operate independently. We scrutinized testing processes and practices, test case design automation, automation engineering, test data management, services virtualization, its test-environment provisioning, and more advanced testing-in-production capabilities. We also looked at accelerators, and we put the biggest emphasis on how each vendor leverages AI in its accelerators, as well as its CT talent management, testing practices, scale of services, and the amount and quality of referenceable work it provided examples of.
- › **Strategy.** We analyzed each vendor's vision and road map, looking at its understanding of the future of testing in the context of modern application delivery that Agile and DevOps enable.<sup>7</sup> We took into account the vendors' development programs for talent and shifts from manual to automated and from business to developer-testers, as well as how they augment business testers with AI. We also factored in employees' happiness, new commercial models, and adaptability to new services; perhaps more importantly than those, we reviewed extensive data on client experience provided through surveys of 25 customer references, ongoing client inquiries, and other sources.
- › **Market presence.** We also evaluated each vendor's continuous testing client base in the last 12 months (as a subset of their total testing client base), CT-specific services revenue, and its internal complement of CT testers.

**Evaluated Vendors And Inclusion Criteria**

Forrester included nine vendors in the assessment: Accenture, Capgemini, Cognizant Technology Solutions, DXC Technology, IBM, Infosys, NTT DATA, Tata Consultancy Services, and Wipro. Each of these vendors (see Figure 3):

- › **Provided three referenceable CT clients.** During the screening phase, we required three names of clients currently working on CT services with them.
- › **Earns more than \$1 billion in global testing services revenue.** In this Forrester Wave, we focused on the largest tier in terms of vendor size.
- › **Provides continuous testing services as defined by Forrester.** We had proof points that the vendor provides a majority of testing services that work in an Agile and DevOps context.
- › **Has sparked client inquiries or services that put the vendor on Forrester's radar.** Forrester clients often discuss these vendors in inquiries; alternatively, the vendor may, in Forrester's judgment, warrant inclusion or exclusion in this evaluation because of its standing in previous vendor landscape research.

Clients of global continuous testing providers are happy with overall experience, but clients of smaller ones are even happier.

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**FIGURE 3** Evaluated Vendors

Vendors
Accenture
Capgemini
Cognizant Technology Solutions
DXC Technology
IBM
Infosys
NTT DATA
Tata Consultancy Services
Wipro

## Vendor Profiles

This evaluation of the continuous testing services market is intended to be a starting point only. We encourage clients to view detailed product evaluations and adapt criteria weightings to fit their individual needs through the Forrester Wave Excel-based vendor comparison tool (see Figure 4 and see Figure 5).

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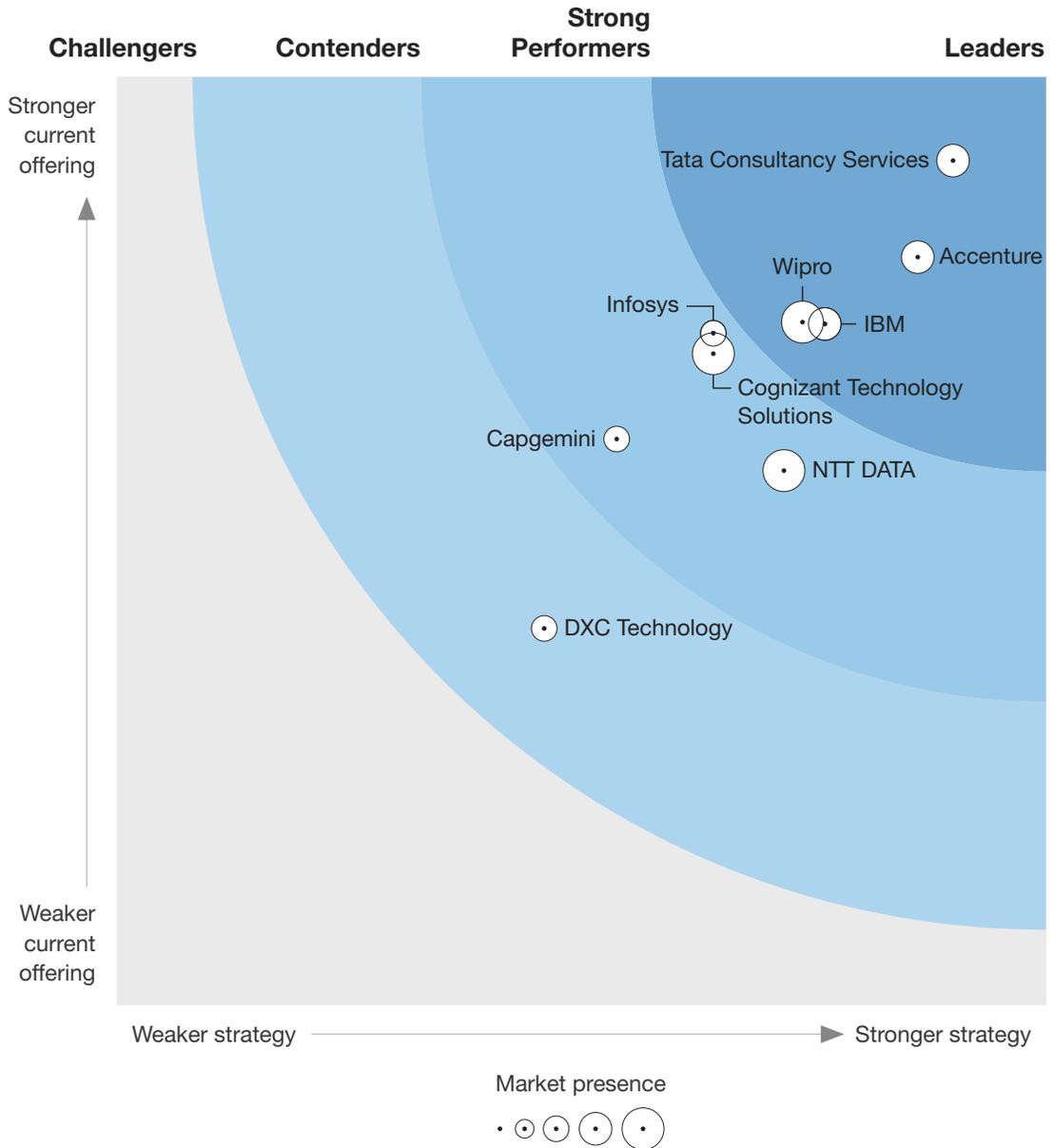
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**FIGURE 4** Forrester Wave™: Global Continuous Testing Service Providers, Q1 2019

# THE FORRESTER WAVE™

## Global Continuous Testing Service Providers

Q1 2019



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**FIGURE 5** Forrester Wave™: Global Continuous Testing Service Providers Scorecard, Q1 2019

	Forrester's weighting	Accenture	Capgemini	Cognizant Technology Solutions	DXC Technology	IBM	Infosys	NTT DATA	Tata Consultancy Services	Wipro
<b>Current offering</b>	50%	4.03	3.05	3.51	2.03	3.67	3.62	2.88	4.55	3.68
CT services approach and breadth	15%	3.80	2.00	2.70	2.70	4.50	4.50	4.50	3.50	4.00
CT core services	20%	4.50	3.75	4.00	1.40	2.75	4.30	2.95	4.60	4.40
Accelerators	20%	4.30	3.00	3.00	1.70	3.70	2.30	3.80	5.00	5.00
CT talent	25%	4.40	3.20	4.40	1.60	3.60	3.30	1.00	4.40	1.60
Referenceable work	10%	1.00	3.00	1.00	3.00	5.00	5.00	5.00	5.00	5.00
Scale of services	10%	5.00	3.00	5.00	3.00	3.00	3.00	1.00	5.00	3.00
<b>Strategy</b>	50%	4.31	2.69	3.21	2.30	3.81	3.21	3.59	4.50	3.69
CT service vision	20%	5.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	5.00
Innovation road map	20%	5.00	3.00	5.00	1.00	5.00	3.00	3.00	5.00	3.00
Employee retention	15%	5.00	3.00	5.00	1.00	3.00	3.00	3.00	5.00	1.00
Revenue per tester	5%	1.00	3.00	3.00	3.00	5.00	3.00	5.00	3.00	3.00
Commercial models	5%	5.00	1.00	3.00	3.00	5.00	3.00	3.00	5.00	5.00
Client intimacy	35%	3.60	2.40	1.60	3.00	3.60	3.60	4.40	5.00	4.40
<b>Market presence</b>	0%	3.80	2.20	4.30	3.00	3.60	2.40	4.40	3.10	4.40
CT client base growth	30%	1.00	5.00	5.00	3.00	5.00	1.00	3.00	1.00	3.00
CT services revenue	35%	5.00	1.00	5.00	3.00	3.00	3.00	5.00	5.00	5.00
CT services versus testing services	35%	5.00	1.00	3.00	3.00	3.00	3.00	5.00	3.00	5.00

All scores are based on a scale of 0 (weak) to 5 (strong).

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**Leaders**

- › **TCS has strong muscles, outside and in, with CT services and accelerators.** Despite the enormous scale of its resources, reference clients praised TCS for its strong outside relationships with them. Internally TCS invests in talent by grooming and developing it with strong programs for delivering an outstanding client-first attitude. Strong in all major core services, TCS also has broad and deep accelerator offerings that set it apart from most of its competitors.

TCS did not tell us how many new-logo CT clients it added to its portfolio in the last 12 months, hurting its market presence score. Despite TCS's strong profitability, Forrester's estimate of revenue per tester for TCS was relatively low given the richness of its accelerators, suggesting that its as-a-service business model has ample space for improvement — a trend common among many big players in testing. Clients looking for global scale, global services, and strong accelerators should have TCS on their radar.

- › **Accenture combines AI and ML accelerators with global-scale services and CT talent.** Accenture demonstrated both breadth and depth in all services globally. It provides impressive AI- and ML-based accelerators that implement many of the emerging use cases of AI in testing: from upfront intelligent quality thinking, to automation and optimization of test-case design, to smart creation and execution of tests. For Accenture, testing is scriptless — full stop. We found huge investments in growing and nurturing CT talent, particularly in nonfunctional (shift-left performance), IoT, and mobile testing.

While AI might enable business testers to be more active participants in testing, Accenture's comparatively small focus on technical and developer testing might be a weakness in highly complex markets and applications that require testing beyond the UI or high-level scripting. The power of Accenture's accelerators doesn't match up with our estimates of revenue per tester — indicating that it doesn't apply its AI accelerators pervasively, a differentiating opportunity for clients. Clients working with Accenture should leverage its innovative AI-based accelerators to optimize and automate testing.

- › **Wipro's AI and ML testing machinery is real, as is its vision for the future of testing.** Wipro is well-differentiated relative to its peers across all the accelerators we evaluated, whether they're completely bot-based, used to augment testers' intelligence, or used to increase test automation end to end. Reference customers appreciated Wipro's vision for testing, its approach in integrating and collaborating with their development teams, and its approach to client intimacy. This was also confirmed by the competitive breadth of CT services, consulting, and coaching approaches Wipro brings to its clients.

While vision and machinery are strengths, Wipro lags behind on talent, as the ratio of purely manual testers to "CT talented engineers" is currently low there. In fact, one reference client told us, "Their vision is sound, but it feels artificial at times." Clients should pay attention to Wipro's higher-than-average employee turnover rate and mitigate any risk by ensuring that Wipro brings its accelerators to bear on their workloads.

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- › **IBM's mantra is CT optimization — and its talent bench is catching up.** IBM has long focused on overall test optimization, developing a platform services approach based on its IGNITE platform. IGNITE is evolving to embed AI and ML technology with a strong focus on natural language processing, Watson and chatbot testing, and leverage of ML algorithms. IBM has clearly strengthened its focus on Agile-plus-DevOps to support clients with continuous testing. Scale, a strong IGNITE innovation road map, high revenue per tester, and flexible client approaches summarize IBM's main strengths.

Transitioning a large manual testing workforce to an innovative platform like IGNITE takes time. Like most other global SIs, IBM is the middle of a transition. As a result, it might not always propose an optimization-led approach to clients — it still needs to optimize its own testing workforce. IBM needs improve in areas like test execution automation and TDM where its capabilities are below average compared to peers. But clients looking at optimization through a strategic lens on should definitively consider leveraging IBM's CT services.

**Strong Performers**

- › **Cognizant's talent engine is first-rate, but client proof points are scarce.** When delivering capable testing services, a strong focus on talent that makes it easier to augment the work people do with accelerators matters a lot — and Cognizant has that. In fact, Cognizant includes QA in its architecture career certification. It employs the QAHub concept to create communities to experiment with intelligent automation, using open source tools, and other innovations. Through its digital engineering and testing services teams, Cognizant offers some strong CT core services like automation engineering, TDM, and SVT with CT talent for end-to-end testing. Employees say they love working at Cognizant, although turnover is higher than average.

Cognizant did not provide the number of references Forrester asked for or many proof points of referenceable work compared to its peers, which would make evaluating how its strengths play out in the real world easier. This did affect its overall positioning. Clients might benefit more if they work with Cognizant using an integrated CT and Agile-plus-DevOps team model rather than as an independent tester.

- › **NTT DATA gets high marks from clients but some core services lag.** NTT DATA stands apart for its consulting and coaching services, as well as a strong testing-as-a-service execution model. Client feedback was very strong; reference clients prize its testing support services, best-in-class client intimacy, and overall execution. NTT DATA differentiates by embedding its testers in client teams and providing integrated testing and Agile-plus-DevOps teams, automation engineering, test environment provisioning, test design optimization, and reporting/analytics accelerators. It also has very high revenue-per-tester and CT ratios compared to competitors.

NTT DATA should focus more on transformation and culture change within testing services clients. TDM and SVT core testing services seem to be weaker than what peers offer. And unlike many of them, NTT DATA doesn't offer a strong DevTestOps platform accelerator. Clients looking for true global scale, not just testing services, should consider NTT DATA in their partner portfolio.

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- › **Infosys emphasizes pragmatic services and talent but has slow new-client growth.** Infosys offers mature and differentiated testing services for all possible client needs: embedded testing teams, independent testing teams, and Agile-plus-DevOps integrated testing teams. Infosys's approach is back-to-basics and outside-in, as it systematically leverages client feedback. As a result, it has a pragmatic focus on clients' short-term testing needs like automation engineering, manual exploratory testing, and efficient test environment provisioning. It also has a strong focus on grooming functional test automation talent. It backs this up with accelerators, including ones for test design automation and DevTestOps process automation.

Looking at the half-empty glass, Infosys was average in many areas compared to peers, and the scale of its IoT and mobile testing resources and its analytics and reporting accelerator lagged behind them. It also did not emphasize groundbreaking innovation in its road map. In addition, new CT client acquisition in the last 12 months was slow. Clients launching CT services will find in Infosys a solid consulting and outsourcing partner with a full-steam process of creating multiple local hubs worldwide.

- › **Capgemini shows strong CT client growth, but also some service gaps.** Capgemini's north star is its World Quality Report (WQR), which it runs every year on thousands of professionals globally. This heavily influences its vision and road map; as a result, its focus for future testing services is on AI and ML, the most promising technologies for optimizing testing both from a business and technical perspective. Behavior-driven development (BDD) and TDD are the cornerstones of its strategy for design automation today, and it offers accelerators for robotic process automation, AI, and ML. Capgemini has strong performance services, such as SVT and test environment provisioning, and differentiating CT talent development for performance, mobile, and IoT testing. Capgemini also showed the highest growth in new CT logos over the last 12 months.

Capgemini provided fewer high-quality client references than peers, so our evaluation does not benefit from perspectives that would have reinforced its standing. Capgemini scored below the peer average on services such as TDM and testing in production (despite robust accelerators). Compared to peers, the firm needs to be more aggressive in innovating its internal talent program, training, and coaching process. European clients might favor Capgemini's proximity and local scale (thanks to the local presence of Sogeti) compared to the other global SIs.

## Contenders

- › **DXC is catching up with decent customer intimacy, but it has many gaps to fill.** DXC is successfully playing catch-up in the continuous testing services market. Its huge growth in new logos and CT services revenue in the last 12 months substantiates that trend and is a promise for its clients in continuous delivery journeys to leverage. DXC's main go-to-market approach is to provision differentiated, continuous testing services within integrated Agile-plus-DevOps teams. New client logos, CT services revenue, and the ratio of CT services versus traditional testing services are growing on a high trajectory.

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But DXC still has many gaps to fill. Despite a broad portfolio of new CT client logos, none of its three reference clients identified an overall Agile-plus-DevOps journey or part of a broader digital transformation. DXC needs to affirm itself in the market with a stronger Agile-plus-DevOps offering to better support its vision for digital transformation service. This will mean increasing innovation in the way it automates testing and augments testers — with more innovative accelerators and more investment in grooming CT talent, employee happiness and retention. Today, DXC might be a fit for clients looking for broader, more general testing services.

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## Supplemental Material

### Online Resource

The online version of Figure 4 is an Excel-based vendor comparison tool that provides detailed product evaluations and customizable rankings. Click the link at the beginning of this report on Forrester.com to download the tool.

### Data Sources Used In This Forrester Wave

Forrester used a combination of three data sources to assess the strengths and weaknesses of each solution. We evaluated the vendors participating in this Forrester Wave, in part, using materials that they provided to us by December 13, 2018.

- › **Hands-on lab evaluations.** Vendors spent one day with a team of analysts who performed a hands-on evaluation of the product using a scenario-based testing methodology. We evaluated each product using the same scenario(s), creating a level playing field by evaluating every product on the same criteria.
- › **Vendor surveys.** Forrester surveyed vendors on their capabilities as they relate to the evaluation criteria. Once we analyzed the completed vendor surveys, we conducted vendor calls where necessary to gather details of vendor qualifications.
- › **Product demos.** We asked vendors to conduct demonstrations of their products' functionality. We used findings from these product demos to validate details of each vendor's product capabilities.
- › **Customer reference calls.** To validate product and vendor qualifications, Forrester also conducted reference calls with three or more of each vendor's current customers.

### The Forrester Wave Methodology

We conduct primary research to develop a list of vendors that meet our criteria for evaluation in this market. From that initial pool of vendors, we narrow our final list. We choose these vendors based on 1) product fit; 2) customer success; and 3) Forrester client demand. We eliminate vendors that have limited customer references and products that don't fit the scope of our evaluation. Vendors marked as incomplete participants met our defined inclusion criteria but declined to participate or contributed only partially to the evaluation.

After examining past research, user need assessments, and vendor and expert interviews, we develop the initial evaluation criteria. To evaluate the vendors and their products against our set of criteria, we gather details of product qualifications through a combination of lab evaluations, questionnaires, demos, and/or discussions with client references. We send evaluations to the vendors for their review, and we adjust the evaluations to provide the most accurate view of vendor offerings and strategies.

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We set default weightings to reflect our analysis of the needs of large user companies — and/or other scenarios as outlined in the Forrester Wave evaluation — and then score the vendors based on a clearly defined scale. We intend these default weightings to serve only as a starting point and encourage readers to adapt the weightings to fit their individual needs through the Excel-based tool. The final scores generate the graphical depiction of the market based on current offering, strategy, and market presence. Forrester intends to update vendor evaluations regularly as product capabilities and vendor strategies evolve. Vendors marked as incomplete participants met our defined inclusion criteria but declined to participate in or contributed only partially to the evaluation. For more information on the methodology that every Forrester Wave follows, please visit [The Forrester Wave™ Methodology Guide](#) on our website.

### Integrity Policy

We conduct all our research, including Forrester Wave evaluations, in accordance with the [Integrity Policy](#) posted on our website.

### Endnotes

- <sup>1</sup> See the Forrester report “[The Forrester Wave™: Continuous Testing Service Providers, Q3 2017.](#)”
- <sup>2</sup> See the Forrester report “[Vendor Landscape: Enterprise Test Data Management](#)” and see the Forrester report “[Agile Test Data Management: The New Must-Have.](#)”
- <sup>3</sup> See the Forrester report “[The Path To Autonomous Testing: Augment Human Testers First.](#)”
- <sup>4</sup> We required proof that providers offered these testing services: service virtualization testing (i.e., for integration testing automation); test-driven development/behavior-driven development, exploratory testing; functional test execution automation — (UI, data driven, API); functional test-design automation — (UI, data driven, API); API test automation; front end mobile testing; TDM (automated governance, provisioning; performance testing (left shifted); A/B testing; analytics and ML; production testing; crowdsource testing; cloud-based automated test environment provisioning; mobile testing (front-end device testing).
- <sup>5</sup> See the Forrester report “[The Forrester Wave™: Continuous Testing Service Providers, Q3 2017.](#)”
- <sup>6</sup> For the providers with revenue between \$50 million and \$1billion, see the Forrester report “[The Forrester Wave™: Continuous Testing Service Providers, Q3 2017.](#)”
- <sup>7</sup> See the Forrester report “[Digital Transformation Requires Development Transformation.](#)”

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