ISG Provider Lens™

Next-Gen Application Development and Maintenance Services

U.S. 2021

Quadrant Report

A research report comparing provider strengths, challenges and competitive differentiators

Customized report courtesy of:

Infosys®

September 2021

About this Report

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The research and analysis presented in this report includes research from the ISG Provider Lens™ program, ongoing ISG Research programs, interviews with ISG advisors, briefings with services providers and analysis of publicly available market information from multiple sources. The data collected for this report represents information that ISG believes to be current as of August 2021, for providers who actively participated as well as for providers who did not. ISG recognizes that many mergers and acquisitions have taken place since that time, but those changes are not reflected in this report.

All revenue references are in U.S. dollars ($US) unless noted.

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ISG Provider Lens™

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ISG Provider Lens™

ISG Provider Lens™ delivers leading-edge and actionable research studies, reports and consulting services focused on technology and service providers' strengths and weaknesses and how they are positioned relative to their peers in the market. These reports provide influential insights accessed by our large pool of advisors who are actively advising outsourcing deals as well as large numbers of ISG enterprise clients who are potential outsourcers.

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EXECUTIVE SUMMARY

The COVID-19 pandemic seemed to benefit the application outsourcing and testing services market in the U.S. following some initial hiccups. Many service providers registered higher single-digit growth for their applications and testing businesses, with some recording double-digit growth rates. They learned to work remotely through virtual meetings, instant messaging and cloud services for collaborating and by closing business deals over the Internet. They also re-structured their contracts to provide more financial flexibility and outcome predictability to enterprise clients.

At the same time, many enterprises embarked on a journey toward agile modernization and transformation to address the various challenges associated with supply chain, customer engagements, workforce collaboration, and product and service delivery among others. They are keen to understand the structure of distributed teams in the solution-building phase and visualize new ways of working with live hackathon or day-in-the-life-of (DILO) sessions. There is now a greater focus on practices, processes and culture, including tooling, performance measurements and people and team dynamics.

While delivery became mostly virtual and remote, most providers in the U.S. are seeking to enhance their onshore or nearshore resource counts. Apart from working toward returning employees to the workplace, they are aiming to overcome time zone differences. This can be seen as a hedging strategy to maintain business continuity across regions that are experiencing the ill effects of the ongoing pandemic at different points in time.

For application outsourcing engagements in the U.S., many providers have built accelerators and their own tools and platforms to expedite the continuous integration and continuous delivery (CI/CD) pipeline, application releases and DevOps integration. The commercial off-the-shelf (COTS) product-set for DevOps is continuously expanding, and providers are training their resources on these technologies. This study finds that less than 50 percent of agile development teams are using DevOps successfully. Providers with robust methodologies, established processes and hands-on experience on automation tools are performing better than their counterparts that fail to provide these aspects as part of their service delivery.

Application transformation deals are falling at the intersection of business services, applications and infrastructure services with focus on cloudification of data. Transformation exercises are encompassing every aspect of an application that can enhance an organization's ability to solve business challenges and harness opportunities through meaningful digital solutions. Experience centricity has also become a top priority for CXOs to drive business outcomes.

As part of transformation initiatives, enterprises are expecting service providers to coach, train and upskill their employees on new ways of working and next-generation technologies. They are also seeking services associated with migration, platforming and modernization. Cloud adoption and modernization are becoming an integral part

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of most application transformation deals. Enterprises are now inclined to elevate their engagement maturity by tracking business KPIs and outcomes as part of their application development and maintenance (ADM) strategy.

The three facets of application outsourcing, namely application development, application management and application testing, are undergoing the following key changes:

Application development imperatives:

- Business models are rapidly evolving by leveraging open ecosystems and architectures based on application programming interfaces (APIs) and microservices.
- Service providers are moving from a project-based to a product-based thinking approach. They support customer journeys with the integration of highly efficient features while leveraging and developing their domain knowledge.
- Enterprises are experimenting with low-code/no-code platforms to quickly provision applications that can solve operational challenges. One such example involves introducing new collaboration features for teams working from home.
- Clients are embracing BizDevOps, which refers to productized application teams that can manage the cradle-to-grave journey of applications.
- Given the escalating risks in the software supply chain, enterprises are seeking a practical approach to scale security across the application lifecycle. Discussions around security with a focus on complying to industry standards are given particular attention during pre-sales and solution cycles. KPIs linked to security and specific roles and processes for managing it across the application lifecycle are also given being prioritized.

Application management imperatives:

- DevOps is expanding to DevSecOps, BizDevOps, AIOps for security focus, business alignment and operational excellence, respectively.
- Robotic process automation (RPA), IT process automation (ITPA), bots, AI and machine learning are increasingly being adopted to drive efficiency and effectiveness. Industrialization with virtual or remote delivery models is also gaining significant traction.
- There is better business outcome alignment and zero disruption across hybrid landscapes with the growth of the everything-as-a-service model. This is driven by more flexible contracts and commitments of suppliers, augmented service-level agreements (SLA), end-to-end business metrics, and user satisfaction.
- Clients are focused on optimizing application maintenance costs through zero defect and self-healing strategies. They are also adopting AIOps, continuous testing, DevOps tool chains and site-reliability engineering (SRE) principles.
- Many clients are following a multi-cloud strategy to avoid a lock-in with cloud service providers and leverage the best from each of them.

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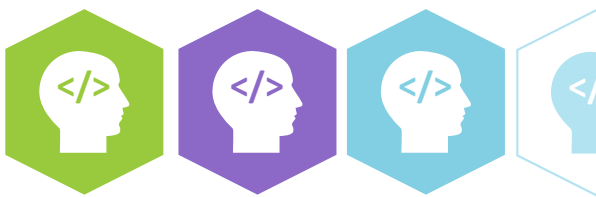
Quality assurance and continuous testing space imperatives:

- The market is moving toward an AI driven, end-to-end test automation template that enables enterprises to achieve rapid digital maturity and accelerate delivery.
- As digital adoption increases over the next three years, continuous (automation) testing services will mature. This will be driven by the increased orchestration with plug-and-play capabilities, embedding of intelligence (AI and machine learning), incorporation of shift right through the integration of customer feedback and production analytics and test ops, and cloudification of quality assurance by moving test assets to the cloud.
- The quality engineering and application realm is expanding significantly to include testing associated with IoT, quantum computing, AI, machine learning, security, big data and analytics, blockchain, resiliency, test advisory and QE transformation programs.
- The demand for domain specialized testing talent is increasing at a significant pace.



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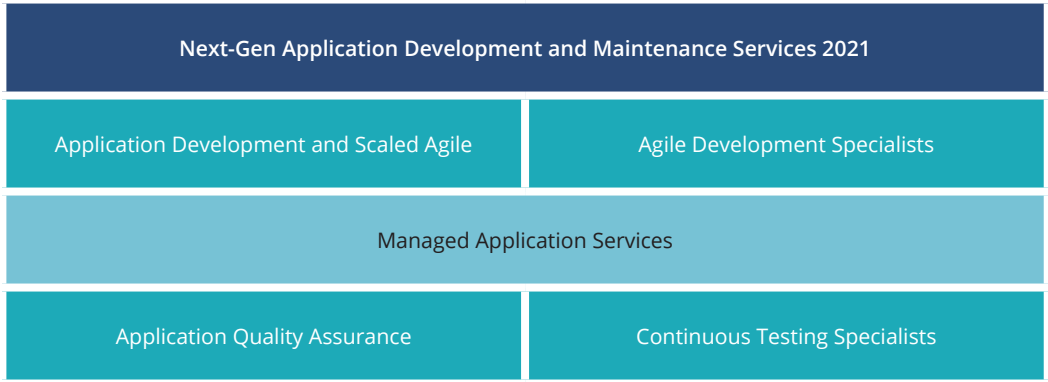
Introduction

Simplified illustration



Source: ISG 2021

Definition

Application outsourcing is continuing to evolve, driven by the increased market growth, higher frequency of updates and addition of feature-led intuitive and interactive digital applications. Service providers in this space are increasingly adopting agile development practices for delivery. Building cloud-native applications has become a de facto standard while scaling application modernization projects. Security is becoming integral to application development cycles from the outset and is being integrated in DevOps and throughout the CI/CD pipeline.

End-user requirements are now being shaped by the need for an enhanced customer experience, quick access to information, elimination of data silos and enabling faster decision making through the use of technology. Enterprises are adapting to the changing requirements through faster release cycles and the frequent deployment of application services. A typical ADM service covers consulting, design, custom development, packaged software integration, operations, quality assurance, security and testing. These traditional services are rendered through new innovative and advanced approaches that are built on emerging technology stacks such as AIOps.

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Definition (cont.)

On the commercial side, enterprises that bore the brunt of the pandemic are more focused on cost savings. Over the past year, flexibility in pricing application outsourcing contracts has become the main parameter for defining client-provider relationships.

Leveraging software capabilities to solve business problems and enable enterprise agility is essential for application outsourcing contracts. Service providers are augmenting their traditional ADM offerings with advanced technologies (AI in operations or microservices-based development) and tailormade roadmaps that contain digital, operational and technology goals to meet client objectives. This study focuses on the recent developments that have taken place across three de facto components of ADM, namely application development, application maintenance and quality assurance. The report will examine and evaluate provider offerings and strengths in the aforementioned areas.

The ISG Provider Lens™ study offers IT-decision makers:

- Transparency on the strengths and weaknesses of relevant providers
- A differentiated positioning of providers by segments
- Focus on different markets, including global (for the archetype report), U.S., U.K., Germany, Nordics and Brazil

This study serves as an important decision-making basis for positioning, key relationships and go-to-market considerations. ISG advisors and enterprise clients also use information from these reports to evaluate their current vendor relationships and potential engagements.

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Definition (cont.)

Scope of the Report

The ISG Provider Lens™ Next-gen ADM quadrant study includes five quadrants as illustrated below:

Application Development and Scaled Agile: This quadrant assesses service providers that offer application expertise with the use of different technologies across several industry verticals. A participant in this quadrant typically has the consulting expertise and high-end technology partnerships to implement CI/CD pipelines, application testing and DevOps, enabling enterprises to achieve better results and improve their application development capacity with reduced time-to-market.

Agile Development Specialists: This section evaluates service providers that offer agile application development based on expertise. These providers have specific knowledge in areas such as programming language, vendor certification, data analytics, AI, machine learning, customer experience and system architecture. They are assessed on their consultation capabilities and the expertise of teams for a particular project.

Managed Application Services: This quadrant assesses service providers on their ability to manage client applications. The services include application support, platform upgrades, application security, bug fixing, troubleshooting, application improvement, and merging of improvement and development backlogs under Kanban or similar methodologies. Participants in this quadrant include providers that can manage a client's entire application portfolio.

Application Quality Assurance: This quadrant assesses service providers that enhance the application lifecycle management process for clients with a comprehensive quality assurance program. This covers the assessment, design, implementation and operation of an application. Participants in this quadrant are evaluated on their ability to provide infrastructure resiliency, digital testing, security, quality assurance artifacts, products and vendor tools, quality strategy and comprehensive quality frameworks.

Continuous Testing Specialists: This section assesses providers of automated testing services based on their ability to develop the testing strategy and scope as well as the methods and scripts before automation and test execution. They have the skills to deploy automation and execute testing cycles while producing the necessary evidence to support compliance auditing.

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Provider Classifications

The provider position reflects the suitability of IT providers for a defined market segment (quadrant). Without further additions, the position always applies to all company sizes classes and industries. In case the IT service requirements from enterprise customers differ and the spectrum of IT providers operating in the local market is sufficiently wide, a further differentiation of the IT providers by performance is made according to the target group for products and services. In doing so, ISG either considers the industry requirements or the number of employees, as well as the corporate structures of customers and positions IT providers according to their focus area. As a result, ISG differentiates them, if necessary, into two client target groups that are defined as follows:

- **Mid Market:** Companies with 100 to 4,999 employees or revenues between US$20 million and US$999 million with central headquarters in the respective country, usually privately owned.
- **Large Accounts:** Multinational companies with 5,000 or more employees or revenue above US$1 billion, with activities worldwide and globally distributed decision-making structures.

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Provider Classifications

The ISG Provider Lens™ quadrants are created using an evaluation matrix containing four segments (Leader, Product & Market Challenger and Contender), and the providers are positioned accordingly.

Leader

Leaders have a comprehensive product and service offering, a strong market presence and established competitive position. The product portfolios and competitive strategies of Leaders are strongly positioned to win business in the markets covered by the study. The Leaders also represent innovative strength and competitive stability.

Product Challenger

Product Challengers offer a product and service portfolio that reflect excellent service and technology stacks. These providers and vendors deliver an unmatched broad and deep range of capabilities. They show evidence of investing to enhance their market presence and competitive strengths.

Market Challenger

Market Challengers have a strong presence in the market and offer a significant edge over other vendors and providers based on competitive strength. Often, Market Challengers are the established and well-known vendors in the regions or vertical markets covered in the study.

Contender

Contenders offer services and products meeting the evaluation criteria that qualifies them to be included in the IPL quadrant. These promising service providers or vendors show evidence of rapidly investing in both products and services and a sensible market approach with a goal of becoming a Product or Market Challenger within 12 to 18 months.

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Provider Classifications (cont.)

Each ISG Provider Lens™ quadrant may include a service provider(s) which ISG believes has strong potential to move into the Leader quadrant. This type of provider can be classified as a Rising Star. Number of providers in each quadrant: ISG rates and positions the most relevant providers according to the scope of the report for each quadrant and limits the maximum of providers per quadrant to 25 (exceptions are possible).

Rising Star

Rising Stars have promising portfolios or the market experience to become a Leader, including the required roadmap and adequate focus on key market trends and customer requirements. Rising Stars also have excellent management and understanding of the local market in the studied region. These vendors and service providers give evidence of significant progress toward their goals in the last 12 months. ISG expects Rising Stars to reach the Leader quadrant within the next 12 to 24 months if they continue their delivery of aboveaverage market impact and strength of innovation.

Not In

The service provider or vendor was not included in this quadrant. Among the possible reasons for this designation: ISG could not obtain enough information to position the company; the company does not provide the relevant service or solution as defined for each quadrant of a study; or the company did not meet the eligibility criteria for the study quadrant. Omission from the quadrant does not imply that the service provider or vendor does not offer or plan to offer this service or solution.

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Next-Gen Application Development and Maintenance Services - Quadrant Provider Listing 1 of 4

	Application Development and Scaled Agile	Agile Development Specialists	Managed Application Services	Application Quality Assurance	Continuous Testing Specialists
a1qa	Not in	Not in	Not in	Contender	Not in
Accenture	Leader	Not in	Leader	Leader	Not in
Aspire Systems	Not in	Contender	Not in	Not in	Not in
Atos	Product Challenger	Not in	Product Challenger	Not in	Leader
Birlasoft	Not in	Leader	Contender	Not in	Product Challenger
Capgemini	Leader	Not in	Leader	Leader	Not in
Cigniti	Not in	Not in	Not in	Not in	Leader
Coforge	Not in	Leader	Product Challenger	Not in	Leader
Cognizant	Leader	Not in	Leader	Leader	Not in
Concentrix	Not in	Contender	Contender	Not in	Contender

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Next-Gen Application Development and Maintenance Services - Quadrant Provider Listing 2 of 4

	Application Development and Scaled Agile	Agile Development Specialists	Managed Application Services	Application Quality Assurance	Continuous Testing Specialists
Cybage	Not in	Rising Star	Contender	Not in	Product Challenger
Deloitte	Contender	Not in	Not in	Not in	Not in
DXC	Market Challenger	Not in	Market Challenger	Not in	Market Challenger
HCL	Leader	Not in	Leader	Leader	Not in
Hexaware	Not in	Leader	Product Challenger	Not in	Leader
IBM	Market Challenger	Not in	Market Challenger	Market Challenger	Not in
Infinite	Not in	Market Challenger	Contender	Product Challenger	Not in
Infosys	Leader	Not in	Leader	Leader	Not in
Innominds	Not in	Contender	Contender	Contender	Not in
LTI	Rising Star	Not in	Rising Star	Not in	Leader

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Next-Gen Application Development and Maintenance Services - Quadrant Provider Listing 3 of 4

	Application Development and Scaled Agile	Agile Development Specialists	Managed Application Services	Application Quality Assurance	Continuous Testing Specialists
Mindtree	Product Challenger	Not in	Product Challenger	Product Challenger	Not in
Mphasis	Contender	Not in	Contender	Contender	Not in
N-iX	Not in	Contender	Not in	Not in	Contender
Persistent Systems	Not in	Leader	Contender	Not in	Product Challenger
QA Consultants	Not in	Not in	Not in	Product Challenger	Not in
QA Mentor	Not in	Not in	Not in	Contender	Not in
Qualitest	Not in	Not in	Not in	Not in	Contender
SLK Software	Not in	Contender	Contender	Contender	Not in
Softtek	Product Challenger	Not in	Contender	Product Challenger	Not in
Stefanini	Not in	Not in	Not in	Contender	Not in

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Next-Gen Application Development and Maintenance Services - Quadrant Provider Listing 4 of 4

	Application Development and Scaled Agile	Agile Development Specialists	Managed Application Services	Application Quality Assurance	Continuous Testing Specialists
Tavant	Not in	Not in	Not in	Not in	Contender
TCS	Leader	Not in	Leader	Leader	Not in
Tech Mahindra	Market Challenger	Not in	Leader	Not in	Leader
TestingXperts	Not in	Not in	Not in	Not in	Contender
TO THE NEW	Not in	Contender	Not in	Not in	Contender
UST	Not in	Leader	Contender	Not in	Leader
Wipro	Leader	Not in	Leader	Leader	Not in
Yash Technologies	Not in	Product Challenger	Not in	Not in	Not in
Zensar	Not in	Product Challenger	Contender	Not in	Product Challenger

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Next-Gen Application Development and Maintenance Services Quadrants

ENTERPRISE CONTEXT

Application Development and Scaled Agile

This report is relevant to enterprises across industries in the U.S. for evaluating providers offering application development and scaled agile services.

In this quadrant report, ISG highlights the current market positioning of providers of application development and scaled agile services in the U.S., based on depth and quality of service offerings and market presence.

Many enterprises want to modernize and revitalize the applications used in business processes as a considerable number of these applications are built on legacy architectures. For these enterprises, it is tough to keep up with business changes as their applications do not have a modular architecture, leading to downtime, cost overruns and increased maintenance. As a result, enterprises want to develop applications that fit the overarching technology landscape. In addition, many organizations want multiple applications working seamlessly on multiple channels as a part of their IT strategies.

Compared with other regions or countries, enterprises in the U.S. are leading in terms of digital transformation and app modernization for their business processes. These enterprises have specific IT infrastructure needs such as security, agility, scalability and integrity.

The complexity of application development or modernization is directly proportional to the size, instances and design of an enterprise application. Therefore, large enterprise clients prefer service providers with a skilled workforce, high integration capabilities and a global presence. Most of the large enterprise implementations occur at a global level, involving multiple regions, hence, enterprises should look not only at the depth of offering of a service provider but also at its regional presence and local expertise.

Who should read the report:

IT and technology leaders should read this report for a clear understanding of the strengths and weaknesses of service providers in their application development and scaled agile practice and to understand how they can integrate the latest technologies/ capabilities into their service offerings?

Line-of-business and industry leaders should read this report to understand the relative positioning of the partners that can help them effectively procure the application services for their business/industry and ensure return on investment.

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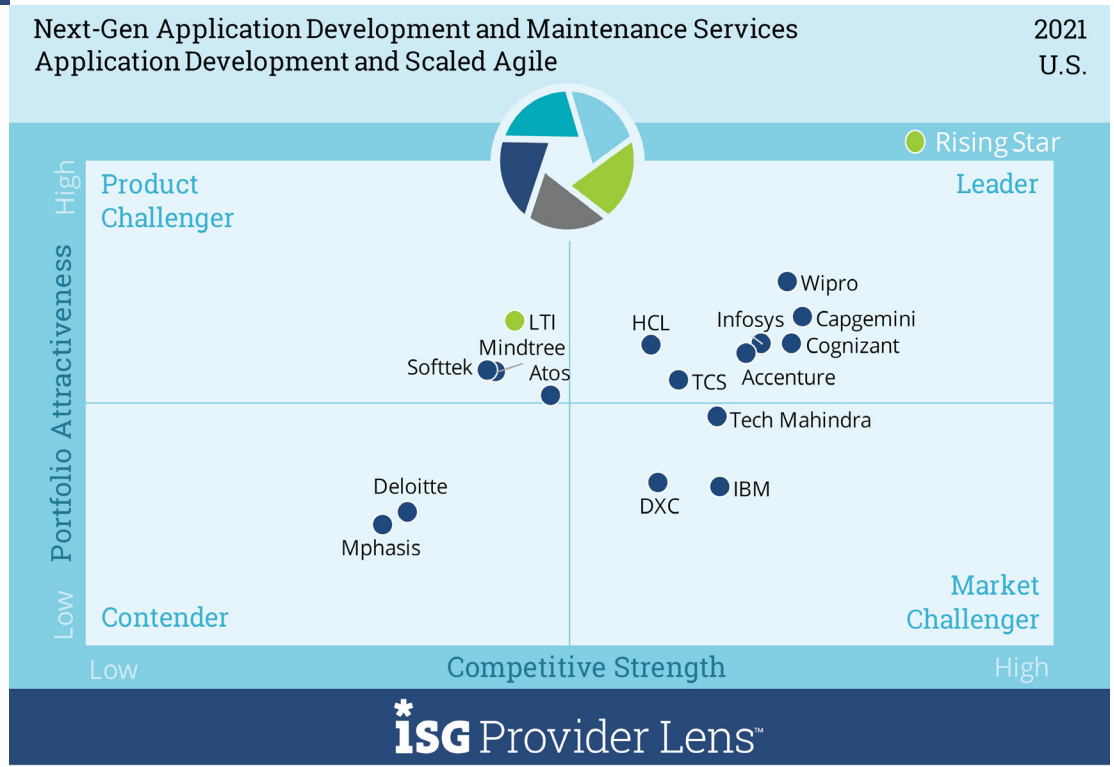
APPLICATION DEVELOPMENT AND SCALED AGILE

Definition

This quadrant assesses service providers that offer application expertise with the use of different technologies across several industry verticals. The assessment determines the way these service providers use project management tools to support and coordinate resource allocation, portfolio management, backlog prioritization, agile methods, waterfall methods, system integration, application modernization, cloud-native application development and other management services to optimize the performance of development teams that work simultaneously in a client's environment.

A participant in this quadrant typically has the consulting expertise and high-end technology partnerships to implement CI/CD pipelines. They also offer application testing and DevOps to help clients perform better and improve their application development capacity with reduced time-to-market.



Source: ISG Research 2021

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APPLICATION DEVELOPMENT AND SCALED AGILE

Eligibility Criteria

- The provider has the ability to manage more than 20 squads for a single client or scale up with more than 1,000 developers working simultaneously in several projects.
- The provider can rapidly scale up or down and add more than 100 developers in a week to meet client demands.
- The provider is certified to transform and deploy agile teams under frameworks such as scaled agile framework (SAFe®) and large-scale scrum (LeSS).
- The provider employs certified practitioners in more than two of the following methodologies: Scrum, Kanban, extreme programming, lean development and Crystal.
- The provider should have established partnerships with development platform providers, including AWS, Microsoft, Google and IBM, and deploy a development workbench for new clients.
- The provider should offer testing services and product development workshops in areas such as design thinking; preferrable to have organizational change management capabilities.

Observations

- **Accenture** has proven capabilities across commercial technology tooling. It is among the few providers that excel in technology and DevOps advisory services while offering an integrated agile and waterfall approach to development.
- **Capgemini** has deep scaled agile capabilities with extensive experience as a lead agile system integrator in multi-vendor environments. The company delivers through a strong partner network.
- **Cognizant** has one of the most comprehensive service portfolios as part of a mature agile practice. It has built a line of intellectual property and accelerators across the application development lifecycle.
- **HCL** has developed a gold-standard approach toward agile development by leveraging the best practices from various agile methodologies. It has a strong onshore presence.
- **Infosys** has built comprehensive toolsets and frameworks for agile, backed by a large pool of local talent.
- **TCS** works on a product driven, microservices-based development approach. This covers strong automation capabilities, backed by a data-driven philosophy.

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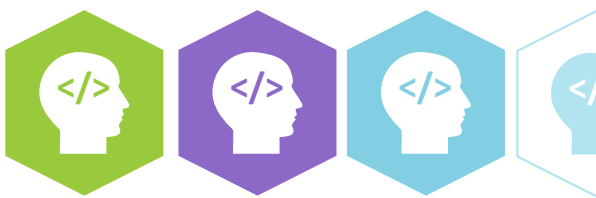
APPLICATION DEVELOPMENT AND SCALED AGILE

Observations (cont.)

- **Wipro** has strong domain, design and consulting capabilities that are supported by a rich set of intellectual property, tooling and an extensive partner ecosystem.
- **LTI** (Rising Star) offers multiple business-driven engagement models and is continuously expanding its business collaboration with hyperscalers. It has a pool of highly trained and cross-skilled professionals.



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INFOSYS

Overview

Infosys, a global IT provider headquartered in Bengaluru, India, generated more than US$2 billion in annual revenue from application development engagements in the U.S for FY21. Around 85 percent of its 825 client engagements in the U.S. run on agile mode supported by more than 25,000 FTEs. The company has a strong localization strategy, having set up 35 regional delivery centers and a team of developers with an average experience of 11 years.

Strengths

Comprehensive toolset and frameworks: Infosys' platforms, tools and accelerators span the entire lifecycle of a transformation program. This includes planning, code analysis and reverse engineering, automated code conversions, accelerated database migrations, rapid testing and DevSecOps.

Rich Talent: Infosys has one of the world's largest corporate training facilities with more than 750 trainers running extensive training programs. It has also developed an in-house anytime, anywhere learning platform called Lex that offers over 1,800 courses with easy consumption on the go. The platform also has inbuilt features such as advanced telemetry, gamification and provision for certifications to enhance the experience.

Delivery presence: Infosys' delivery centers and offices are spread in 220 locations across 46 countries. The company deploys agile digital at scale to make service delivery agnostic for the location. Its total application transformation staff count exceeds 82,000 globally (including around 13,000 digital architects and designers), of which around 60,000 are in active transformation projects. Despite the impact of the COVID-19 pandemic, it managed to hire around 10,800 employees in 28 countries.

Caution

Infosys should focus on getting more FTEs trained on skills such as feature-driven development and rapid application development.

The company can improve its competency on tier-2 enterprise resource planning (ERP) platforms such as Epicor and Acumatica.

2021 ISG Provider Lens™ Leader

Infosys has a strong track record of winning large client deals and retaining them over time. Past acquisitions of Blue Acorn iCi, Simplus, Guide Vision and Kaleidoscope Innovation have further improved its value proposition.

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ENTERPRISE CONTEXT

Agile Development Specialists

This report is relevant to enterprises across industries in the U.S. for evaluating providers offering agile development services.

In this quadrant report, ISG highlights the current market positioning of providers of agile development in the U.S., based on depth and quality of service offerings and market presence.

Due to changing business needs, many enterprises want to develop applications with greater speed and shorter time-to-market and release cycles in order to increase efficiency. Enterprise application development has evolved at a rapid pace and is now moving toward cloud-based platforms owing to benefits such as easy scalability and integration. Enterprises now want to develop applications that fit the overarching technology landscape. Also, ISG observes increasing demand for application programming interfaces (APIs) and reusable components to enable easy integrations across solutions.

Compared with other regions or countries, enterprises in U.S. are leading in terms of adopting these technologies in their business processes. These enterprises have specific IT infrastructure needs such as security, agility, scalability and integrity Enterprise clients need to evaluate providers not only on their capabilities but also on the frameworks developed and different methodologies used during the course of development.

Who should read the report:

IT and technology leaders should read this report for a clear understanding of the strengths and weaknesses of service providers in their agile practice and to understand how they integrate the latest technologies/capabilities into their service offerings?

Line-of-business and industry leaders should read this report to understand the relative positioning of the partners that can help them effectively procure the application services for their business/industry and ensure return on investment.

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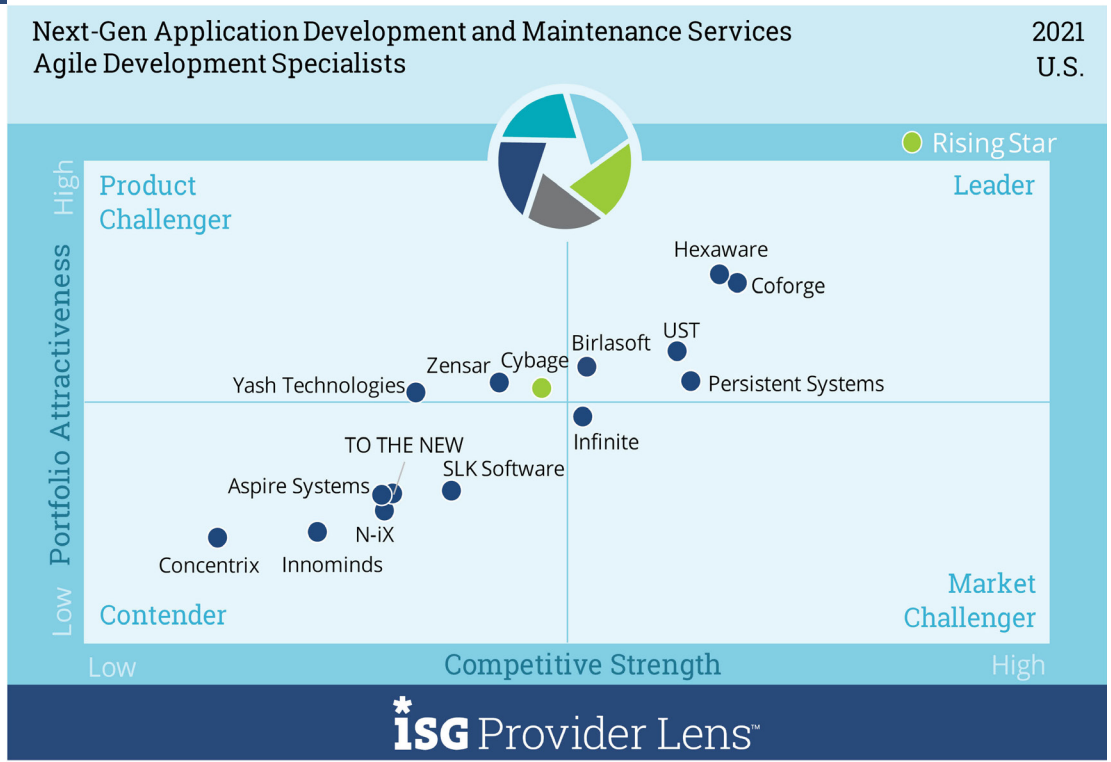
AGILE DEVELOPMENT SPECIALISTS

Definition

This quadrant evaluates service providers that offer agile application development based on expertise. These providers have specific knowledge of areas such as programming language, vendor certification, data analytics, AI, machine learning, customer experience and system architecture, primarily aimed at enterprises that find it difficult to scale and other specialized areas. They may also specialize by industry verticals (for example, ecommerce, sales automation for B2B, car insurance and retail banking), function-specific knowledge (fraud detection, credit score, payment systems, online training tools and virtual reality for fashion retail and others), and methodologies (product-oriented development, object-oriented programming, functional programming and interactive programming).



Source: ISG Research 2021

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AGILE DEVELOPMENT SPECIALISTS

Definition (cont.)

Participants in this quadrant have expertise in a few or several areas and typically work on short-term projects for specific outcomes. They are assessed on their consultation capabilities and the expertise of teams that are assigned to a particular project. The selection process is based on their ability to determine a talent acquisition program, establish a work environment to retain consultants, provide training programs and contributions to industry associations. They are also evaluated on their research centers, knowledge and use of specialized media.

Eligibility Criteria

- Providers should showcase completed projects under US$5 million (less than US$2 million for regions such as Brazil) and for durations under 18 months; large projects are exempted and most likely have staggered releases.
- Providers should demonstrate case studies or referenceable clients with tangible results (case studies, outcome-based deals, digital products delivered, POD-based delivery).
- The provider offers squads for client-managed application development units.
- The provider should engage many squads to support each client but does not manage the combined squads for just one output deal; each squad having own goals, costs and SLAs.
- The provider should manage squad size and provide experts according to throughput targets; offer commercial business model centers on squads and not headcount; services exclude staff augmentation.
- Providers should have specializations in at least one of the following methodologies: Scrum, Kanban, extreme programming, lean development and Crystal.
- The provider should offer optional quality assurance services and product design workshops such as design thinking.

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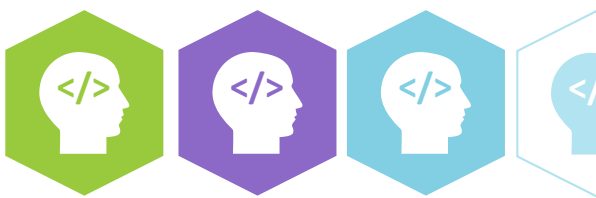
AGILE DEVELOPMENT SPECIALISTS

Observation

- **Birlasoft** has developed an impressive set of solutions, frameworks and accelerators. It has a strong industry focus and generates most of its revenue from the U.S.
- **Coforge** is well versed with emerging technologies and brings in strong application modernization capabilities.
- **Hexaware** has a comprehensive delivery approach augmented by cross-skilled and POD team structures.
- **Persistent Systems** brings in its product engineering heritage with an impressive co-engineering agile POD model. It specializes in data integration services.
- **UST** has a comprehensive application portfolio, global delivery presence, robust partner ecosystem and an impressive set of tools and accelerators.
- **Cybage** (Rising Star) has a strong application development framework that gives wide coverage of the DevOps tools ecosystem and software development areas.



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ENTERPRISE CONTEXT

Managed Application Services

This report is relevant to enterprises across industries in the U.S. for evaluating providers of managed application services.

In this quadrant report, ISG highlights the current market positioning of providers of managed application services in the U.S. and the way they address the key challenges faced by enterprise clients in the country.

In the U.S., the need for automation and a focus on app modernization and implementation drives the demand for managed application services. Enterprises seek managed application services for existing applications in the business processes. These enterprises are seeking managed application service providers that can help them in level 2 and level 3 application support, incident resolution, maintenance, security and user support. Enterprises need these services fine-tuned to their business objectives with reduced risk and high agility in alignment with dynamic business environments. They are looking for a rapid solution design and optimized service delivery across their businesses.

Who should read the report:

IT and technology leaders should read this report for a clear understanding of the strengths and weaknesses of providers offering managed application services and their competency in developing frameworks and tools for the same.

Sourcing and procurement managers should read this report for a clear understanding of the service provider ecosystem for managed application services in U.S. and how the various providers can be compared with each other.

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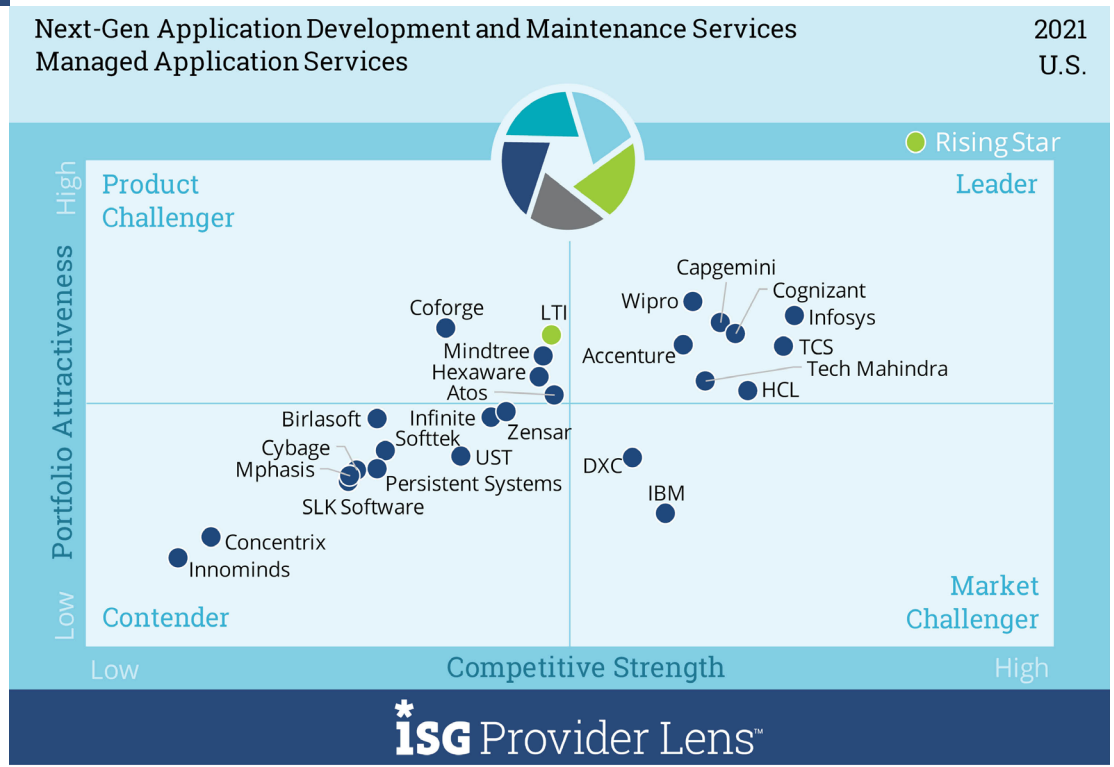
MANAGED APPLICATION SERVICES

Definition

This quadrant assesses service providers that take the responsibility of managing clients' applications. The services include application support, platform upgrades, application security, bug fixing, troubleshooting, application improvement and merging of improvement and development backlogs under Kanban or similar methodologies. Some providers include application monitoring, release management, version control, defect identification and resolution and database query performance in their service offerings. Typical service parameters include time taken to resolve an incident or service request, service availability, defect rate, user satisfaction and user experience.

Participants in this quadrant include service providers that can manage a client's entire application portfolio (all applications running in production, excluding infrastructure and cloud services). Service transition, the phase when a provider onboards a new client, should include application documentation, service ticket records, knowledge transfer and expert transfer (in some cases). Ongoing service delivery, the period after transition, includes quality improvement programs and service knowledge refresh under the scope of work.



Source: ISG Research 2021

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MANAGED APPLICATION SERVICES

Eligibility Criteria

- The provider should demonstrate expertise in deploying and operating service platforms for team performance monitoring and defect management, including troubleshooting.
- Providers should integrate more than two service platforms such as Atlassian Jira, ServiceNow, SAP Solution Manager, service desk tools and application development platforms (AWS, Microsoft Azure, Google Anthos and IBM Rational).
- The provider should offer a service management platform to handle application tickets, service requests and track service levels; those using client tools to demonstrate certifications and expertise in integrating and managing commercial-grade platforms.
- Providers should showcase quality improvement capabilities, wherein they commit to quality improvement programs to reduce incidents that involve applying lean methodologies and AI or machine learning for analytics (trends and predictions) with incident/service request automation.
- The provider should offer fixed service fees or outcome-based contracts, providing clients with options except for staff augmentation.

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MANAGED APPLICATION SERVICES

Observations

- **Accenture** has a holistic AMS offering complemented by a comprehensive intelligent automation portfolio and the proprietary Liquid Application Management methodology.
- **Capgemini** relies on its integrated operating model and industrialized remote delivery to serve U.S. clientele, offering a range of business-centric bespoke solutions.
- **Cognizant** differentiates itself with its platform-based service industrialization, industry-oriented solutions, cloud-first strategy and flexible commercial models.
- **HCL** has a comprehensive application management services (AMS) framework augmented by its flexible contracting approach and a mature partner ecosystem.
- **Infosys** has a mature AMS platform called Live Enterprise Application Platform (LEAP) along with a robust partner ecosystem. It offers flexibility to clients through various contracting models.
- **TCS** has a strong DevOps and productization strategy and offers deep automation capabilities.
- **Tech Mahindra** has an impressive maturity-based managed services framework and DevOps expertise, backed by a skilled workforce.
- **Wipro** provides integrated service delivery supported by proprietary tooling and flexible commercial models.
- **LTI** (Rising Star) offers strong cloud capabilities, proven frameworks and a platform-driven AMS approach through its Mosaic platform.

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INFOSYS

Overview

Infosys, headquartered in Bengaluru, India, leverages its proprietary Live Enterprise Application Platform (LEAP) to deliver a unique value proposition. The company generated more than US$3.8 billion in annual revenue from the U.S. for FY21. It serves more than 800 enterprise clients in the U.S., supported by 25,000 FTEs with an average experience of 11 years. The company serves the region through 35 delivery centers.

Strengths

Infosys' Live Enterprise Application Platform (LEAP): Infosys LEAP is a modular, plug-and-play platform for AMS. The platform offers several features, such as a business control center, IT command center, Living Labs experimentation, AIOps, bots factory and gamification. It has more than 40,000 of its associates trained in automation technologies.

Strong Partnership eco-system: Infosys has curated more than 1,200 startups to crowd innovate the business challenges faced by clients. It works with various academic institutions to reskill its employees. For example, the provider collaborated with Rhode Island School of Design to train employees on design skills, with Purdue University on cybersecurity, and with Cornell University on program management. Infosys enjoys the highest level of partnership with 64 of its key alliance partners such as SAP, Oracle, Salesforce and hyperscalers. Over the last 24 months, it has added over 80 transformation partners to its network.

Commercial flexibility: Infosys offers an as-a-service model especially in large managed services and transformation deals that include the takeover of assets and employees. This has boded well for the provider especially during the pandemic. Some other new-age commercial constructs include synergy-linked discounts across multi-tower deals, outcome-based pricing, application-based pricing based on application slabs, and upfront cash infusion via asset/facility/intellectual property takeover.

Caution

Infosys should further strengthen its competency in AIOps tooling.

2021 ISG Provider Lens™ Leader

Infosys has been successful in shifting the paradigm from IT SLA-led AMS to business process, KPI-driven AMS for several U.S.-based clients. This acts as a key differentiator for the company in this space.

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ENTERPRISE CONTEXT

Application Quality Assurance

This report is relevant to enterprises across industries in the U.S., for evaluating providers of quality assurance.

In this quadrant report, ISG highlights the current market positioning of providers of quality assurance in the U.S., and the way they address the key challenges faced by enterprise clients in the country.

The need to use cognitive applications, and quality assurance at speed and automated testing, among enterprises, drives the market. These enterprises want to seamlessly plan, manage, integrate and execute testing. Also, they are looking at high quality applications and cost optimization. Service providers are addressing these needs by integrating technologies such as AI and machine learning to automate end-to-end testing processes and develop self-healing bots to reduce human interventions.

ISG observes that the service providers in this space are creating domain- and industry-specific customized solutions to provide low-complexity, low-cost, and highly agile solutions in testing to address specific client business needs.

Who should read the report:

IT and technology leaders should read this report for a clear understanding of the strengths and weaknesses of service providers in their continuous testing practice and to understand how they integrate the latest technologies/capabilities into their service offerings?

Line-of-business and industry leaders should read this report to understand the relative positioning of the partners that can help them effectively procure the application services for their business/industry and ensure return on investment.

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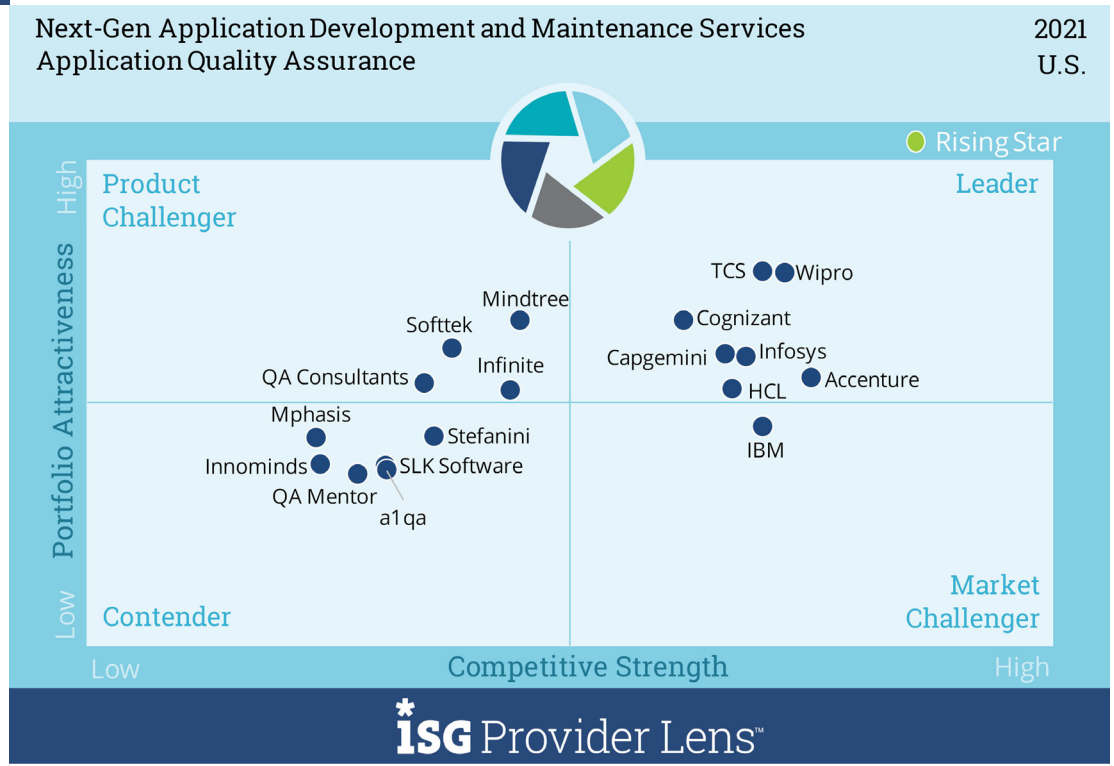
APPLICATION QUALITY ASSURANCE

Definition

This quadrant assesses service providers that enhance the application lifecycle management process for clients with a comprehensive quality assurance program, involving the assessment, design, implementation and operation of the application. Quality assurance encapsulates multiple tasks, including setting requirements, estimations, project planning, documentation and fixed sprint execution timelines. It also involves setting the functional criteria for a product to be deemed complete and testing it to identify bugs or defects.

Quality assurance defines procedures and processes to attain a desired product or service quality at the project level, covering a client's complete application portfolio. Under this quality assurance program, developers, testers and operators share the responsibility of ensuring that the overall product or service meets the desired quality.



Source: ISG Research 2021

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APPLICATION QUALITY ASSURANCE

Definition (cont.)

Participants in this quadrant are evaluated on their ability to provide infrastructure resiliency, digital testing, security, selection of quality assurance artifacts, products and vendor tools, quality strategy and comprehensive quality frameworks. They are also assessed on their ability to leverage production logs to provide insights for improved application quality and performance, integrate application performance management tools to extract insights for the quality assurance program, apply AI and machine learning over logs, and monitor data to predict the quality of new applications.

Eligibility Criteria

- Providers should maintain a centralized quality assurance unit for laying down quality standards for all projects.
- The provider should offer a comprehensive quality assurance framework, encapsulating planning, implementation, monitoring, review and improvements.
- Providers should use technology (performing analytics over logs and use of AI) for continuous improvement in results.
- The provider should use proprietary tools and accelerators for faster time-to-market.
- The provider should leverage vendor partnerships for quality monitoring, application performance tools and testing tools.

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APPLICATION QUALITY ASSURANCE

Observations

- **Accenture** achieves quality engineering transformation at scale. Its practice brings in best-in-class platforms and frameworks and AI capabilities along with multiple registered patents.
- **Capgemini** delivers a comprehensive service catalog backed by intellectual property and a highly capable workforce.
- **Cognizant** has a dedicated quality engineering and assurance practice and works on an automation-first approach.
- **HCL** offers multiple specialized and niche services for application quality assurance. It has a dedicated center of excellence and a mature partner ecosystem.
- **Infosys** has an innovation-driven core, strong industry partnerships and a highly skilled workforce in this domain.
- **TCS** brings in AI-based solutions, a wide range of commercial and in-house tooling, and scores high on automation capabilities.
- **Wipro** has a cohesive delivery approach backed by an intelligence-driven quality engineering function.

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INFOSYS

Overview

Infosys, headquartered in Bengaluru, India, works on a strong localization strategy in the U.S. The company generated US$893 million in annual revenue from quality assurance services in the region. The U.S. practice serves 358 clients through 14,700 resources, of which 22 percent work onshore. Around one-fifth of its quality resource pool operate in a DevOps model. Infosys relies on 29 delivery centers for delivering quality assurance services to U.S.-based clients. The average experience of its FTEs is 11 years.

Strengths

Innovation-driven core: Infosys has a dedicated innovation team that collaborates with various units and iCETS (Infosys Center for Emerging Technologies) to continuously drive innovation across projects and build intellectual property. It has built numerous differentiated solutions such as an AI-powered extreme automation platform (Infosys QE platform), cloud-based quality engineering assets (over 1,500 on Infosys Cobalt), two cloud validation platforms on the hyperscalers marketplace, and the Assure AI platform (part of Infosys applied AI).

Strong partner network: Infosys has strategic partnerships with 200 leading software vendors. From this network, it has key partnerships with 50 tool vendors such as Micro Focus, Broadcom, Cavisson and Applause. The company also has 15 domain partners such as Finastra, Salesforce, Murex and Accelrys, which are classified into strategic, growth and innovation groups.

Highly trained workforce: Infosys offers 12,000 digital testers and over 1,800 courses through its in-house learning platform called Lex. It has weaved various programs for its leaders in association with premier academic institutions such as Stanford, MIT, Wharton, Princeton, Cornell and Purdue.

Caution

Infosys can further expand its presence and client base in areas of infrastructure resiliency testing and test-driven development.

2021 ISG Provider Lens™ Leader

Infosys has a well-defined quality engineering process and an impressive list of digital accelerators. It is a strong candidate to win engineering-led digital deals in the U.S.

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ENTERPRISE CONTEXT

Continuous Testing Specialists

This report is relevant to enterprises across industries in the U.S., for evaluating providers of continuous testing.

In this quadrant report, ISG highlights the current market positioning of providers of continuous testing in the U.S., and the way they address the key challenges faced by enterprise clients in the country.

Due to changing business needs, many enterprises, want to develop applications with greater speed, with shorter time-to-market and release cycles in order to increase efficiency. Enterprises now also want to shorten the software development lifecycle (SDLC) and integrate security in every phase of the application development lifecycle.

The increase in agile and DevOps methodologies for automated testing approaches such as shift-left and end-to-end automation, across testing phases, drives this market. Enterprises are now adopting this methodology as their current testing process is time-consuming and increases the cost of delivery. Service providers are addressing this need by bringing development, testing and operations together in seamlessly planning, managing and executing testing to accelerate the process.

Who should read the report:

IT and technology leaders should read this report for a clear understanding of the strengths and weaknesses of service providers in their continuous testing practice and to understand how they integrate the latest technologies/capabilities into their service offerings?

Line-of-business and industry leaders should read this report to understand the relative positioning of the partners that can help them effectively procure the application services for their business/industry and ensure return on investment.

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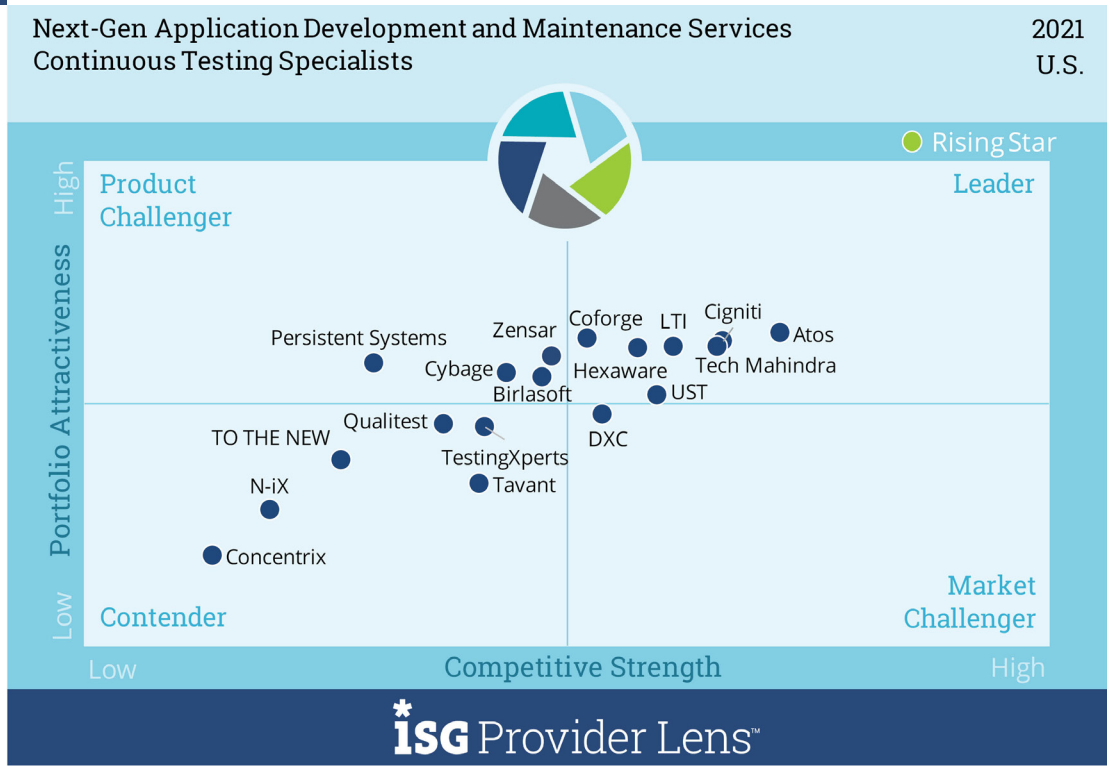
CONTINUOUS TESTING SPECIALISTS

Definition

This quadrant assesses providers of automated testing services. These companies develop testing strategy and scope as well as the methods and scripts before automation and test execution. They have the skills to deploy automation and execute testing cycles, producing the necessary evidence to support compliance auditing.

Continuous application testing focuses on delivering quality in tandem with the speed of agile development. It encompasses various aspects of automated testing such as shift-left and end-to-end automation across testing phases and at every phase of the continuous delivery process. However, it goes beyond automation-based testing in terms of people and processes – it accomplishes better collaboration between quality assurance and development teams. It also establishes sync with sprint cycles and enables feature-driven testing, responsiveness to change, creation of a feedback loop and more client involvement. Continuous testing is becoming crucial, especially for helping enterprises keep pace with their agile and DevOps initiatives.



Source: ISG Research 2021

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CONTINUOUS TESTING SPECIALISTS

Eligibility Criteria

- Providers should engage qualified professionals for test-driven development, behavior-driven development and other approaches.
- The provider should handle large-scale testing and continuous integration demands of complex systems such as enterprise resource planning (ERP) and ecommerce with many test cases.
- Providers' portfolios should include unit testing, system testing, regression testing, compliance testing, performance/load testing, user-acceptance testing and smoke testing.
- The provider should offer consulting services that include test automation implementation, integrated with the development and DevOps tools of clients; should help clients optimize their continuous testing performance to reduce testing time.
- Providers' continuous services should include testing data and test coverage assessments, enablement of automated tests across many continuous integration pipelines, and the management of testing artifacts for high reutilization of such artifacts.
- Providers should help clients to replicate testing practices and use automated testing on multiple projects.

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CONTINUOUS TESTING SPECIALISTS

Observations

- **Atos** differentiates itself with its intelligent automation capabilities, technology accelerators and partners along with a pool of capable resources for the continuous testing practice.
- **Cigniti** has focused domain competencies, a cohesive delivery approach and a next-generation testing platform. It is expanding its nearshore delivery capabilities for U.S.-based clients.
- **Coforge** scores high on consulting capabilities and has built a series of solution accelerators, supported by a highly capable delivery platform for continuous testing.
- **Hexaware** has an "automation first" platform-driven delivery approach, complemented by key vendor partnerships in this space.
- **LTI** has a strong delivery ethos, bespoke solution capabilities and a skilled continuous testing resource pool.
- **Tech Mahindra** has an extensive services portfolio, strong industry alliances and a skilled workforce in this space.
- **UST** offers an array of digital assurance services with a flexible pricing approach. It has numerous examples of applying proprietary tooling to achieve favorable results.

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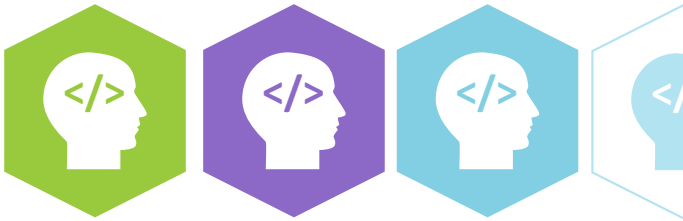
Methodology

METHODOLOGY

The research study "ISG Provider Lens™ 2021 – Next-gen ADM study" analyzes the relevant software vendors/service providers in the <U.S.>. market, based on a multi-phased research and analysis process, and positions these providers based on the ISG Research methodology. The study was divided into the following steps:



1. Definition of Next-gen ADM market
2. Use of questionnaire-based surveys of service providers/vendor across all trend topics
3. Interactive discussions with service providers/vendors on capabilities and use cases
4. Leverage ISG's internal databases and advisor knowledge and experience (wherever applicable)
5. Detailed analysis and evaluation of services and service documentation based on the facts and figures received from providers and other sources.
6. Use of the following key evaluation criteria:
   - Strategy & vision
   - Innovation
   - Brand awareness and presence in the market
   - Sales and partner landscape
   - Breadth and depth of portfolio of services offered
   - Technology advancements

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Mr. Aase brings extensive experience in the implementation and research of service integration and management of both IT and business processes. With over 35 years of experience, he is highly skilled at analyzing vendor governance trends and methodologies, identifying inefficiencies in current processes, and advising the industry. Jan Erik has experience on all four sides of the sourcing and vendor governance lifecycle - as a client, an industry analyst, a service provider and an advisor. Now as a research director, principal analyst and global head of ISG Provider Lens™, he is very well positioned to assess and report on the state of the industry and make recommendations for both enterprises and service provider clients.

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ISG Provider Lens™ | Quadrant Report
September 2021

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