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 November 2020 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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EXECUTIVE SUMMARY

Next-gen ADM

Application development and maintenance (ADM) services continue to evolve, led by changing customer preferences and the adoption of digital technologies. Digital technologies adoption is driving the need for rich user interfaces, dynamic applications, responsive features and speedy updates and releases. The portfolio of available next-generation ADM services can transform and streamline the application estates of enterprise clients to meet these dynamic customer requirements.

At an overall level, ADM services have primarily focused on three areas for clients – portfolio optimization, modernization and enablement of the digital transformation journey – while application maintenance has focused on reducing their maintenance footprint. A proactive and predictive approach for application maintenance services has been gaining momentum and is fueled by the need for greater visibility on KPIs and metrics. This has led to use of cognitive technologies, bots, robotic process automation (RPA), artificial intelligence (AI) and machine learning (ML) throughout the ADM lifecycle. Using these technologies helps to simplify and minimize coding efforts, leading to a faster application development release. These technologies also help in error detection, code refactoring, interpreting business rules (often written in arcane coding languages) and bug fixes. IT service providers are also looking to increase their presence to offer more of a full stack. In the U.S., we observed service providers taking a vertical industry-specific strategy for digital transformation and DevOps.

The COVID-19 pandemic led to developments on various fronts in ADM services. Enterprise service providers quickly regrouped to ensure business continuity, resilience, cost optimization and security in their services. Against this backdrop, remote working, mobile connectivity, security mechanisms in IT infrastructure and virtual collaboration through communication tools for employees came to the fore to ensure uninterrupted services for clients. ADM practices adapted swiftly to the changed reality. This adaptation was reflected in several areas, including agility and the mode of its delivery. There was increased use of collaboration tools to achieve scale, productivity and tighter integration with best practices such as offshore, distributed Agile capabilities. A few service providers also extended their capabilities by coming up with solutions and services to remotely serve client needs in supply chain and logistics.

The use of automation in ADM, along with development of proprietary tools, intellectual property (IP), frameworks and methodologies, continues to grow across IT service providers. They remain focused on creating virtual learning and knowledge-based vehicles to train employees on various technical areas and increase their certifications base to be business ready. The focus on cloud-native applications and their adoption has led to APIs, microservices architecture and low-code development slowly becoming norms. Security has found tighter integration, both in terms of protecting intellectual property and of applicability in the testing value chain across areas such as nonfunctional tests.
Application Maintenance Services – Midmarket / Niche

Services offered within application maintenance services (AMS) can be broadly categorized into the areas of run and build. The services in these two areas broadly comprise application operations, support, maintenance, enhancements, change management and process improvement. Operational services, functional enhancements, data support, assessments, security, reporting and dashboarding are some of the other AMS service areas that service providers offer. Enterprise clients’ AMS needs include reducing their maintenance cost footprint, increasing the transparency of business outcomes through automation, improving stability, gaining AMS templates, enabling knowledge transfer and acquiring tools and checklists. Service providers offer support and maintenance services for both legacy and greenfield applications. Some of the common and key services that providers offer in their AMS portfolios include 24x7 support, incident management, problem management, monitoring and other support.

Frameworks such as IT Information Library (ITIL) are being leveraged to achieve services standardization to establish reliability and accountability in AMS. Enterprise clients look forward to robust and cost-optimized services spanning multiple geographies and time zones, supported by a skilled workforce for various software portfolios for customer applications, business applications and domain-specific software (e.g. SAP, Peoplesoft and others). Most service providers have a dedicated proprietary AMS solution to serve both production support and application enhancements. Most of these services are directed to ensure application availability and stability. Service providers are using proprietary assets composed of tools and IP to leverage the benefits of AI in AMS. The use of AI helps in providing insights on business processes, metrics and asset maintenance.

Zero maintenance is emerging as the next level of progression in AMS. With this in perspective, providers are taking various routes that include developing an exhaustive understanding of the application landscape, detailed documentation and excellence in operations. Chatbots, tools and AI are being used in transition, task automation, IT service management (ITSM), cost optimization and ticket management tasks to enhance productivity for clients. Service providers are also using AIOps, which leverages machine learning (ML), natural-language processing (NLP) and robotic process automation (RPA), for self-healing, automated provisioning, problem management and defect pre-emption.

Agile Development

Service providers are accelerating their efforts toward building an agile organization. Some of the aspects of this drive include focus on roles, collaboration, change management, tools, strategy and investments in resource enablement. Some of the areas service providers are targeting for enabling an agile workforce are skills assessment, coaching,
leadership development and global online learning strategies. They are also emphasizing training teams and resources to embrace Agile by enabling learning through external content. From a collaboration perspective, virtual elements are being included in collaboration and team onboarding. Some of the collaboration and workspace initiatives include conducting hackathons, creating ideation platforms, Agile pods, collaborative spaces for idea brainstorming and dashboarding. With a focus on value stream mapping, training and cultural aspects, a gradual shift can be observed from a process-oriented approach to a culture-led approach.

An Agile operating model is another key element of focus of service providers to achieve scale. They are focusing on this aspect in their overall Agile strategy. An Agile playbook, which offers best practices to set up a distributed Agile model for clients across geographies, comes as an extension to this operating model. Service providers are also focusing on expanding their resources trained on Design Thinking, Scrum, Kanban, Extreme Programming (XP) and their variants to accelerate Agile maturity. They are also driving initiatives to gradually inculcate an Agile mindset across their organizations by creating customized frameworks, practices, templates, estimation guidelines and case studies. Distributed and scaled Agile has gained prominence as a delivery model. The COVID-19 pandemic has further increased the relevance of distributed and scaled Agile. Some of the measures being undertaken include carrying out inclusive Agile ceremonies across time zones and enabling seamless collaboration and communication using tools such as Microsoft Teams, Slack and others.

Providers continue to offer Agile delivery led by their proprietary frameworks and tools. They also are partnering with bodies such as Scaled Agile Framework (SAFe) and automation tool providers such as Docker, Ansible and Jenkins and getting certifications from Scrum Alliance, Scrum.org, SAFe and Disciplined Agile Delivery (DAD) to create an Agile workforce. Creating an Agile mindset across the growing resource base remain a focus, along with skills management and standardizing Agile delivery.

Continuous Testing – Large Accounts

Continuous testing is being impacted by several factors related to ADM. Some of them include resiliency, stability, security, move to hybrid cloud, automation, customer experience and modernization. Talent, especially to ensure skilled resource availability across tools, is another important area IT service providers are addressing. Continuous testing has become an integral part of the service providers' Agile and DevOps delivery mechanisms, and security is being integrated with it. Its importance can be gauged by the increasing use of shift-left and shift-right practices by IT service providers.

Some of the leading services delivered by providers as a part of their continuous testing portfolios include test planning, test environment setup, functional tests, test-driven development (TDD), behavior-driven development (BDD), performance testing, nonfunctional validation and reporting. Automation is being embedded within the continuous testing lifecycle across test case management, automation engineering services, proprietary tools and intellectual property. Service providers are also embedding automation within continuous testing to accelerate application release and enhance efficiencies by reducing and removing repeatable tasks. The roles of analytics, AI and ML have also gained
prominence over the last year. AI is also being used in testing platforms to improve agility and predictability across various phases. Intelligence is increasingly getting embedded within the testing lifecycle in test script generation, self-healing, test automation, test data generation, test selection, diagnostics, defect diagnostics and performance prediction.

Given the multitude of tools (open-source and others) available in the testing domain, integrations and the flexibility to leverage them for clients in a timebound manner become important for service providers. While a few service providers include popular tools from other providers in their proprietary testing platform, for flexibility, clients also look for connectors and integrations for a large base of tools. So, service providers are increasing their partnerships with players in the testing tool ecosystem to pass on the benefits of a skilled and trained workforce to clients. The large volume of test data generated from these multiple tools in the continuous testing lifecycle makes improving visibility and deriving insights into areas of importance for clients. Hence, service providers are incorporating visualizations within their dashboards to infer insights onto a single pane to help correlate information and make it measurable for clients.

Continuous Testing – Midmarket And Expert Consulting

Continuous testing services are led by demand for application resiliency, stability, security, moves to hybrid cloud, automation, improved customer experience and modernization. Some of the tenets required by clients include consistent, reliable and standardized testing services along with automation to manage dynamic testing requirements. Clients also look for a broad base of testing services that extends to mobile and other form factors. Within continuous testing, service providers are offering the use of shift-left and shift-right practices led by an Agile and DevOps model. Enterprise clients are looking for deep-seated testing expertise and a dedicated, trained workforce composed of Software Design Engineers in Test (SDETs) and quality engineers to deliver testing engagements.

Metrics measurement, governance and security are some of the salient aspects of the continuous testing services delivered by service firms. Test planning, test environment setup, functional tests, TDD, BDD, performance testing, nonfunctional validation and reporting are some of the leading services delivered by service providers as a part of their continuous testing portfolios. Analytics, AI and ML have taken more prominent roles within continuous testing over the last year. Automation is being embedded within the continuous testing lifecycle across test case management, automation engineering services, proprietary tools and intellectual property creation. AI is also being used in testing platforms to improve agility and predictability across various phases.

Given the multitude of tools (open-source and niche) available in the testing domain, preparedness and availability of a trained workforce available for client engagements in a timebound manner becomes important for service providers. While a few service providers include popular tools from other providers in their proprietary testing platform, clients also look for connectors and integrations for tools in the testing ecosystem. So, service providers are increasing their partnerships with players in the testing tool ecosystem to pass on the benefit of a trained workforce to clients. Service providers are also investing to create proprietary intellectual property and other assets. They are increasing their
focus on training and learning initiatives by certifying resources on tools such as Selenium, UFT, SmartBear and others. Reporting and dashboarding of metrics from such tools has emerged as an important area for process improvement and business insights. Service providers leverage the data generated by these tools and create effective visualizations in their dashboards for a unified view to streamline processes in a single pane.

DevSecOps Consulting

DevSecOps covers the three key areas of people, process and tools for continuous delivery of software development. With the objective of improving speed and time to market in software development, culture, roles, teams and operating model have become important from a people perspective within DevSecOps. One more element has become integral to DevOps: security. It now occupies center stage and is integrated within the DevOps lifecycle by most service providers. The process elements within DevSecOps, which involves Agile, continuous integration and continuous development (CI/CD), continuous feedback, shift-left and workflow management, contribute to accelerated software development and delivery.

DevSecOps has gained substantial traction in recent years, and this is evident in the thin boundaries it shares with Agile development. DevSecOps growth is being led by the need to deliver agility in business. Service providers are basing their DevSecOps services on the key tenets of people over process over tools, amplified feedback, Lean management, auto-gating, chaos re-engineering, continuous integration and continuous delivery. Culture (to adopt DevSecOps practices), automation (for code generation), artificial intelligence (AI) and machine learning (ML) practices for visibility, and tools usage (open-source and proprietary) are some of the other key drivers that have an impact on DevSecOps delivery by service providers.

Service providers leverage their proprietary assets composed of tools, accelerators, frameworks and other IP, to deliver DevSecOps. These assets broadly cover the lifecycle stages of plan, build, test and deploy. Many tools, both open-source and niche, are available in the ecosystem. Service providers are increasing their partnerships with tool vendors to introduce more flexibility in their client engagements. Several service providers also offer centers of excellence (CoEs) for DevSecOps to facilitate sharing of best practices along with IP creation. Talent enablement for DevSecOps is another focus area for service providers, which have launched dedicated learning initiatives for technologies and tools.
Introduction

Definition

Application outsourcing continues to evolve, and service providers are increasingly adopting Agile development practices for their service delivery. Changes are being driven by client demand for increased velocity, more frequent updates and feature-led, intuitive and interactive digital applications. Although the application outsourcing market continues to have waterfall-based traditional development engagements, the incorporation of disruptive Agile-based operating models continues to outpace the former, thereby making core development model a direct competitive advantage for many enterprises. Enterprise customer requirements are currently being led by mobile and other emerging technologies, which, in turn, are fueling the transformation of the application services landscape.

Enterprises are adapting to this changing environment through faster releases and deployments of application services. Of course, not all application outsourcing is the same, because not all buyers and users have the same needs. The typical application development and maintenance (ADM) services include application consulting, design, custom development, packaged software...
integration, operations, quality assurance, security and testing. However, the elements related to speed and faster releases in this traditional approach are coming from DevOps and Agile methodologies. Service providers are leveraging application programming interfaces (APIs) and microservices and are utilizing low-code/no-code platforms, containers and a cloud-native approach to build nimble, manageable applications and accomplish their speedy release.

ISG has been witnessing contracts where clients are looking to new ways to leverage software capabilities to solve business problems and gain competitive advantage, as well as to address the increasing need to improve speed to market. Service providers are augmenting their traditional ADM offering with these emerging methodologies, technologies and collaborative frameworks to meet their clients' objectives. ISG terms such contract types as next-gen ADM contracts. This study focuses on understanding client objectives and assessing provider capabilities to deliver on next-gen ADM contracts.

Scope of the Report

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

- Transparency on relevant provider' strengths and weaknesses;
- A differentiated positioning of providers by segments;
- Focus on different markets, including the U.S., Germany, the U.K., the Nordic countries and Brazil.
Provider Classifications

The ISG Provider Lens™ quadrants were created using an evaluation matrix containing four segments, where the providers are positioned accordingly.

**Leader**

The Leaders among the vendors/providers have a highly attractive product and service offering and a very strong market and competitive position; they fulfill all requirements for successful market cultivation. They can be regarded as opinion leaders, providing strategic impulses to the market. They also ensure innovative strength and stability.

**Product Challenger**

The Product Challengers offer a product and service portfolio that provides an above-average coverage of corporate requirements, but are not able to provide the same resources and strengths as the Leaders regarding the individual market cultivation categories. Often, this is due to the respective vendor’s size or their weak footprint within the respective target segment.

**Market Challenger**

Market Challengers are also very competitive, but there is still significant portfolio potential and they clearly lag behind the Leaders. Often, the Market Challengers are established vendors that are somewhat slow to address new trends, due to their size and company structure, and therefore have some potential to optimize their portfolio and increase their attractiveness.

**Contender**

Contenders are still lacking mature products and services or sufficient depth and breadth of their offering, while also showing some strengths and improvement potentials in their market cultivation efforts. These vendors are often generalists or niche players.
Rising Star

Rising Stars are usually Product Challengers with high future potential. Companies that receive the Rising Star award have a promising portfolio, including the required roadmap and an adequate focus on key market trends and customer requirements. Rising Stars also have excellent management and understanding of the local market. This award is only given to vendors or service providers that have made extreme progress towards their goals within the last 12 months and are on a good way to reach the leader quadrant within the next 12 to 24 months, due to their above-average impact and innovative strength.

Not In

This service provider or vendor was not included in this quadrant as ISG could not obtain enough information to position them. This omission does not imply that the service provider or vendor does not provide this service. In dependence of the market ISG positions providers according to their business sweet spot, which can be the related midmarket or large accounts quadrant.
## Next-gen Application Development & Maintenance (ADM) Services - Quadrant Provider Listing 1 of 4

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# Next-gen Application Development & Maintenance (ADM) Services - Quadrant Provider Listing 3 of 4

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Next-gen Application Development & Maintenance (ADM) Services Quadrants
ENTERPRISE CONTEXT

Next-gen ADM

This report is relevant to enterprises across industries in the U.S. for evaluating providers offering next-gen application development and maintenance services.

In this quadrant report, ISG highlights the current market positioning of providers for next-gen application development and maintenance services in the U.S., based on depth of service offering and market presence.

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

Compared with other regions/countries, enterprises in U.S. are leading from the front in terms of digital transformation and app modernization for their business processes. These enterprises have specific IT infrastructure needs like security, agility, scalability and integrity. ISG also notes that many of these implementations take place in different cloud environments (public or private) based on the criticality of the data. A service provider can support an enterprise client by addressing the challenges (stated above).

The complexity of application development or modernization is directly proportional to the size 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, so 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 ADM practice and to understand how they integrate the latest technologies/capabilities into their service offerings to find a competitive edge in the market.

**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 to ensure return on investment.
Like traditional application services, next-generation ADM includes consulting, design, custom development, packaged software integration, DevOps, Agile, operations, security (including application security, governance and other related areas), application maintenance and testing. However, the scope, delivery mechanism and outcome for such contracts pivot around a value-based approach where the focus is on achieving enterprise agility and solving business problems. This quadrant analysis assesses service providers based on their capability to augment traditional ADM services with emerging technologies and methodologies like Agile development, DevOps, automation, data analytics and artificial intelligence, plus digital and modernization techniques to deliver application lifecycle projects. It assesses provider capabilities in incorporating new approaches to deliberately focus on business results during application development and delivery.
**NEXT-GEN ADM**

### Eligibility Criteria

- The provider should have capabilities to cover the lifecycle of ADM services, including design, development, integration, security and testing, along with consulting.
- The provider should also showcase its execution and use of emerging technologies and methodologies like Agile, DevOps, chaos re-engineering and automation in its ADM processes.
- The provider should have capabilities and frameworks to offer digitalization and modernization techniques for legacy application modernization, application portfolio rationalization and replacement.
- The provider can handle large-scale application development and maintenance teams with robust governance and processes that enable quality assurance, team-performance SLAs and remote delivery with a nearshore or offshore capacity.

### Observations

- **Accenture’s** key differentiators include its proprietary assets, such as the myWizard platform and Liquid Studios, for rapid application development, plus strong digital focus and industry-specific tooling capabilities.
- **Atos’** exclusive offerings such as Atos Studio, Atos Bridge, SyntBots and other in-house tools and platforms, along with alliances with Google and OutSystems and investments in Business Technology Investment Centers (BTICs) make it a leader in next-generation ADM.
- **Capgemini’s** large next-generation ADM practice, well-defined ADMnext delivery framework, large palette of tools and accelerators, playbook-led delivery, Business Command Centers and AI integration in the ADM lifecycle make the company one of the leading providers of next-generation ADM services.
- **Cognizant** has a well-formulated ADM strategy that is supported by IP-led proprietary frameworks and models, industrialized offerings and its OneModernize platform for modernization. These aspects position the company as a leader in the next-generation ADM domain.
HCL offers a good combination of platforms, proprietary frameworks, solutions and tools. Its investments in IP, along with steady growth of its ADM practice as a part of its Mode 1-2-3 strategy, make it a good choice for large scale Agile-led digital transformation services.

IBM’s deep-seated expertise in next-generation ADM, combined with a strong skilled workforce, network of innovation centers, consulting expertise and delivery capabilities, make the company a strong player in this domain.

Infosys offers a strong ADM portfolio that is composed of the Live Enterprise Application Platform (LEAP), Bot Factory Framework and Modernization Suite for application modernization. These proprietary assets, combined with company’s large-scale focus on ADM, establish it a leader in this domain.

TCS’ investment to develop a skilled workforce, its resiliency and remote services, coupled with its focus on cognitive, tool chain, advanced analytics and customer experience, make it a force to reckon with in ADM.

Wipro fortified ADM investments in platforms, cloud-native development, CoEs and merit-based talent mobilization by leveraging Topcoder to remain a leader.
ENTERPRISE CONTEXT

Application Maintenance Services – Midmarket / Niche

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

In this quadrant report, ISG highlights the current market positioning of providers of application maintenance services for midmarket 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 the growth of app modernization and implementation drives the demand for application maintenance services.

Like large enterprises, small and medium-sized enterprises seek application maintenance services for their existing applications. These enterprises face the challenge of maintaining applications, managing the IT landscape, resolving tickets and customizing development based on needs. Enterprises can benefit by investing in the services of application maintenance providers that can help them establish an IT landscape that meets their needs and add bots (automation) for quick resolution of tickets.

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 maintenance services and their competency in developing frameworks and tools to effectively manage their applications.

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

Application maintenance services comprise application support and bug-fixing. Services can include application monitoring, application change management, script development to integrate patches and releases, defect identification and resolution, and database management. AMS services spanning monitoring, bug-fixing and troubleshooting can include user support and ticket lifecycle management. AMS usually complies with a contractual services level agreement (SLA) and adheres to process references such as ITIL and other standards. This quadrant analysis includes niche application services providers that have specialized in selected technologies (programming languages, frameworks or platforms) or niche packaged applications.

The Application Maintenance Services for the Midmarket quadrant analysis includes companies that focus on midsize enterprise clients. Typical clients have less than $1 billion annual revenue or a user base of less than 5,000 users. The service providers in this quadrant usually support a large infrastructure-as-a-service (IaaS) workload distributed over a broad client base.
Eligibility Criteria

- Service providers should have carried out SLA-led system monitoring, defect management and troubleshooting management services for at least five clients.
- The provider can deliver services in collaboration with other service providers when working for large accounts.
- The AMS services are delivered from a local/regional base and do not necessarily have an offshore operation.

Observations

- **Coforge** has a broad AMS portfolio supported by its GeN2xt service model. Its cognitive-based tools, proprietary assets and partnerships with leading industry players make it an ideal choice for reliable application management services.
- **Hexaware**'s automation-focused AutomatON platform for hands-free operations, plus its broad set of proprietary reporting and governance tools for application management services, make it a leader in AMS.
- **Mindtree** showcases strong technology leadership, which is highlighted in its CAPE™ platform. Its automation-led delivery approach, combined with tools, accelerators and industry partnerships, establish Mindtree as a formidable force in AMS.
- **Mphasis**, with its AMS-centric Application Evolution Framework, base of proprietary assets and service transformation framework, has become a strong choice for AMS services for enterprise clients.
- **Virtusa**’s “Eliminate – Automate – Simplify” framework, along with its expertise in delivering application managed services through homegrown tools, have made it a leader.
- **Zensar** has long-serving expertise in AMS spread across various industries. Its AMS services are strengthened by the company's SAMURAI framework and proprietary tools, which have an AI and ML flavor.
- **YASH Technologies**' catalog-led AMS services, supported by integrated delivery hubs and proprietary assets, make it the Rising Star.
Mindtree is a leading IT services provider headquartered in India and has approximately 2,600 resources in the AMS practice globally. Mindtree derived close to $150 million revenue in the U.S., where it has five delivery centers and serves 70 clients. The company’s AMS practice grew by 30 percent annually. Mindtree offers hyperautomated services and platform-led AMS service delivery for its clients.

**Platform-led delivery approach:** Mindtree’s delivery is platform-based and includes service delivery automation, predictive maintenance, a Lean and Agile delivery model, RPA, ML, bots, autodiscovery and reverse engineering. These features help deliver automation benefits and accelerate service delivery levels for clients.

**Proprietary CAPE™ engineering platform:** Mindtree’s Composable Automated Platform for Enterprises (CAPE) includes modules for various maintenance functions plus tools, bots and accelerators that reduce costs and improve throughput for enterprise clients. The platform helps in reducing run costs by more than 40 percent by converting clients to more efficient operational processes.

**Partnerships:** Mindtree has a strong base of partnerships with industry players such as UiPath, Blue Prism, CAST and H2O.ai. The partnerships help clients get AI, analytics and digital customer experience benefits.

Mindtree should leverage its CAPE™ platform to expand the base of enterprise clients in the U.S.
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 to find a competitive edge in the market.

**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 to ensure return on investment.

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**Agile Development**

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 of service offering and market presence.

Many enterprises, due to changing business needs, want to develop applications with greater speed, shorter time to market and shorter release cycles in order to increase efficiency. Enterprise application development has evolved at a rapid pace and now is moving toward cloud-based platforms, owing to the factors like easy scalability and integration. Enterprises now want to develop applications that fit the overarching technology landscape. Also, ISG observes increasing demand for APIs and reusable components to enable easy integrations across solutions. Compared with other regions/countries, enterprises in U.S. are leading from the front in terms of adopting these technologies in their business processes. These enterprises have specific IT infrastructure needs, such as security, agility, scalability and integrity. A service provider can support an enterprise client by addressing all the needs. Also, 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.
AGILE DEVELOPMENT

Definition

Agile development mainly focuses on the frameworks and principles of Agile, a collaborative way of working together in uncertain circumstances. In the software development domain, Agile showcases an incremental and iterative approach to application development, with the ability to adapt and respond to change as the key tenets. Because Agile encompasses frequent, short development cycles and early releases of the software product, enterprises are viewing it as a medium for attaining enterprise agility. Agile includes frameworks such as Scrum, Extreme Programming (XP), feature-driven development (FDD) and the dynamic systems development method (DSDM).

Led by business needs such as feature-rich, interactive applications and faster time to market, application development is being transformed by the onset of several new technologies, such as APIs, microservices, cloud-native technologies, low-code/no-code platforms and containers.
Definition (cont.)

APIs and microservices are used to break monolithic enterprise applications into smaller, independent, loosely coupled reusable services, which reduces complexity and makes applications easier to manage. Low-code and no-code platforms allow applications to be created without the need to write code, by using a visual development environment to develop mobile and web applications by dragging and dropping components and connecting them. Providers are integrating these technologies into their Agile development approaches to meet the objectives of having a simplified application codebase, resiliency and manageability.

This quadrant analysis assesses the capabilities of a provider to deliver tangible results through the use of various Agile methodologies like Scrum, Kanban, Crystal, Extreme Programming and others. It also looks at the focus a provider has toward the use of Agile development within its overall application development practice.

Eligibility Criteria

- Ability to deliver tangible results through the use of various Agile methodologies, like Scrum, Kanban, Crystal, Extreme Programming (XP) and others
- Capabilities and a dedicated team of Agile-certified Scrum Masters with certifications such as PMI-ACP, Scrum Alliance SCM, SAFe, EXIN and others
- Capacity to scale Agile outsourcing to enterprise-grade clients
- The provider should have carried out API lifecycle management functions composed of library maintenance, usage statistics, performance monitoring, updates, security, reuse patterns and documentation, along with the API security for a minimum of 10 clients.
- Microservices should have been used to redefine the monolithic application architecture in at least three industry domains/verticals.
- Providers should have demonstrated capabilities to manage, monitor and test microservices.
- The provider should offer some form of a low-code or no-code platform or asset for application development and have carried out live implementations for clients using the platform.
**Observations**

- **Capgemini** is a leader due to its distributed and scaled Agile delivery, service engagement playbook to drive agility and EASE framework for Agile transformation.

- **Cognizant**’s large pool of skilled Agile practitioners, Agile best practices, large-scale frameworks and partnerships with a few leading automation tool vendors make the provider a leader in Agile development.

- **HCL**’s Agile practice is strengthened by the company’s proprietary FENIX model for scaled Agile delivery, along with investments in skills progression of its workforce through its Knowledge Academy, Communities of Practice (CoPs), Open Spaces and hackathons.

- **IBM** integrates Agile throughout the application development life-cycle across multiple engineering disciplines through Agile-focused education, tooling, processes and frameworks, making it a leader.

- **Infosys** has a large pool of Agile-ready resources. Led by its chairman’s vision to be Agile ready, the company has made significant investments that include developing a strong education roadmap delivered through its learning platform, partnerships with ecosystem players and design innovation hubs.

- **Mindtree**’s cultural-transformation-focused Agile Center of Practice (ACoP) and its innovation- and ROI-focused GATE2 framework make the company a leading service provider.

- **TCS** has a well-established broad Agile practice comprising a large pool of Agile development engineers, Scrum Masters and Agile coaches. The company’s investments in collaborative Agile virtual workspaces, reusable tools and an Agile portal make it a leader.

- **Wipro**’s Agile Anywhere framework for Agile services delivery, along with its learning and certification initiatives on open-source tools, have made it one of the leading service providers.

- **Hexaware** has a distributed scaled Agile model and focuses on product-centric development, organization change culture and training its resources to enhance team productivity. This has established the company as a Rising Star.
Mindtree is a leading IT services provider headquartered in India. With approximately 5,000 Agile development resources, Mindtree derived close to $500 million in revenue in the U.S. Mindtree derives 75 percent of its development revenue from Agile, compared with 25 percent from traditional development. The company delivers speed and scale for customers across the IT lifecycle of planning, development, testing and deployment by bringing together key tenets of Agile, DevOps and test automation.

Global Agile Teams for Enterprise (GATE2): Story distribution based on collaboration and distributed teams are some of the core tenets of Mindtree’s GATE2 framework. The framework supports onsite Agile delivery and enables innovation to enhance return on investment. Mindtree has partnered with customers to collaboratively refine cutting-edge product ideas before they commit to funding long-term development. It plans to increase its focus on GATE2 for distributed Agile implementations in the U.S.

Agile Center of Practice (ACoP): The ACoP enables the client’s Agile journey by growing its team coaches through Mindtree’s Coaches Academy. The academy trains and mentors client resources on the skills required for them to become Agile coaches. Advanced learning dojos are set up to support Agile teams, Scrum Masters, story authors, product owners and business owners to quickly master the skills required to advance the client on its Agile journey.

Agile Framework: Mindtree’s Agile Framework caters well to the needs of its enterprise clients. The framework blends SAFe, LeSS, Scrum, Extreme Programming and Kanban and enables the company to become flexible and deliver business value to customers.

Mindtree has a Vista-level partnership with CloudBees for Jenkins, but it needs to extend relationships to other packaged tool vendors such as Chef, Docker and Puppet.
Continuous Testing – Large Accounts

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

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

The need among enterprises for quality assurance at speed and 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 these challenges by bringing development, testing and operations together in seamlessly planning, managing, and executing testing to accelerate the process.

ISG sees increasing demand for cloud-native applications among enterprises that are built end to end and managed on cloud using technologies such as containers and APIs. Enterprises must evaluate providers that can benefit them in addressing all the above challenges.

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 to find a competitive edge in the market.

**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 to ensure return on investment.
Continuous testing focuses on delivering quality assurance at speed. In terms of technology, 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, in terms of people and processes, it goes beyond automation-based testing. Thus, continuous testing accomplishes higher collaboration among quality assurance (QA) and development teams to sync with sprint cycles, do feature-driven testing, be responsive to change, create a feedback loop and support greater client involvement. Continuous testing is gaining momentum, especially to help enterprises keep pace with their Agile and DevOps initiatives.

Continuous Testing for Large Accounts includes service providers that focus on large clients, usually supporting more than 5,000 users for enterprises with more than $1 billion in annual revenue.
Continuous Testing – Large Accounts

Eligibility Criteria

- Providers should exhibit execution using test-driven development (TDD), behavior-driven development (BDD) and other approaches.
- Providers should demonstrate capabilities to provision and use service (test) virtualization processes, test case management.
- These providers can handle large-scale testing and continuous integration demands of complex systems such as ERP, multisite e-commerce, multicountry solutions and other systems with a large number of test cases.

Observations

- **Capgemini** has developed several frameworks, such as DiA, SmartQA, CAFÉ Next, OPTIK, ITAP and SNOOP, for test automation, workflow management and other areas. The company has also created cognitive assets and established its presence with a large base of delivery centers, making it a leader.
- **Cognizant** created multiple proprietary assets in the areas of testing platform, automation, nonfunctional testing and quality assurance. The company's investments in scriptless automation and bot integration within the testing lifecycle make it a prominent player in continuous testing.
- **HCL** offers a well-rounded strategy for continuous testing anchored on tools, innovation and talent. The company built a platform for scriptless automation and automated test execution, making it one of the leading service providers in continuous testing.
- **IBM** is one of the leading service providers with extensive capabilities built on decades of experience. The company's IGNI TE framework, combined with Watson's capabilities for testing, make it a leading player in testing.
Infosys has a strong cross-skilled DevTestOps practice. Its testing services portfolio is strengthened by a mix of artificial intelligence (AI), machine learning (ML) and cognitive IP tools and accelerators for automation, validation and assurance areas, and establishes the company's leadership in this domain.

TCS's broad portfolio of services covering the continuous testing spectrum is supported by proprietary IP, accelerators and platforms such as its Smart Quality Engineering Assessment Framework, which all contribute to making the company a leader in continuous testing.

Wipro has a large resource base, CoE-led delivery and the Intelli-Assure platform powered by Wipro HOLMES for test cases. These strengths, combined with bots for defect logging and test suite optimization, make it a leader.

LTI, the Rising Star, has developed the Canvas platform, which offers speed and efficiency to clients by leveraging AI and ML extensively for a plethora of functional areas within testing.
ENTERPRISE CONTEXT

Continuous Testing – Midmarket and Expert Consulting

This report is relevant to enterprises across industries in the U.S. for evaluating providers of continuous testing for the midmarket and expert consulting.

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

The need among enterprises for quality assurance at speed and 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 these challenges by bringing development, testing and operations together in seamlessly planning, managing, and executing testing to accelerate the process.

ISG sees increasing demand for cloud-native applications among enterprises that are built end to end and managed on cloud using technologies such as containers and APIs. Enterprises must evaluate providers that can benefit them in addressing all the above challenges.

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 to find a competitive edge in the market.

**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 to ensure return on investment.
Definition

Continuous testing focuses on delivering quality assurance at speed. In terms of technology, 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, in terms of people and processes, it goes beyond automation-based testing. Service providers, with their focused operations, help clients achieve cost efficiencies in application testing functions. The providers serve niche testing requirements composed of various types of testing, such as automated, regression, functional and performance testing. The service providers serve as a one-stop shop for clients’ testing requirements and also work with large service providers to execute application testing requirements for them.

The Continuous Testing for the Midmarket analysis includes companies that focus on midsize enterprise clients. The typical client revenue is less than $1 billion annually, or its user base is under 5,000 users.
Observations

- **Coforge's** large and skilled continuous testing workforce, array of proprietary assets and industry partnerships establish its leadership in continuous testing.

- **Cybage** offers a hybrid development framework. The combination of proprietary assets, such as its Fusion test automation framework and its skilled, engineering-backed workforce for seamless delivery, make Cybage a dominant testing player in the midmarket.

- **Hexaware's** strength lies in its broad base of innovative proprietary assets such as tools, accelerators and platforms that deliver digital transformation for its clients, making it one of the leading service providers for midmarket clients in continuous testing.

- **Mindtree's** technical prowess, technology leadership and strong IP assets, such as the Dynamic Test Engineering Platform 4.0 and Digital Automation Framework, make it a leader.

- **UST Global's** vertical approach, delivered through its NoSkript™ automation and other proprietary assets for data management, self-healing and quality management, make the company a leader in continuous testing.

- **Cigniti** is a testing-focused services provider. It is a Rising Star as a result of its strong North America focus coupled with its proprietary BlueSwan™ test automation suite.
Mindtree is a leading IT services provider headquartered in India. Mindtree has approximately 2,300 employees in the continuous testing practice. The company derived close to $104 million in revenue from continuous testing in the U.S., where it has two delivery centers and serves 29 clients. Its continuous testing practice grew by 5 percent. Mindtree offers clients a tool-agnostic unified test automation platform, Dynamic Test Engineering Platform (DTEP) 4.0, in a plug-and-play model.

**Digital Automation Framework (DAF):** Mindtree's DAF framework is integrated into its DTEP, which is a scriptless test automation framework. This enables even resources such as test engineers with less proficiency in programming to create a test automation script. DTEP also has embedded AI across the testing lifecycle for test case design (PoC stage), self-healing of automation scripts and enabling statistics-driven testing.

**Collaboration for feedback:** Mindtree drives collaboration with both commercial and open-source tools for collaboration and instant feedback for continuous learning. Close to 80 percent of Mindtree's customers use Confluence, SharePoint or Teams. Mindtree also has expertise in Jira, Zephyr and Google Forms for continuous feedback.

**Partnerships:** Mindtree has partnered with players such as Applitools, BrowserStack, ConformIQ, Eggplant, Microfocus, Neotys, Tricentis and Perfecto Mobile to apply new AI-based approaches in testing.

Mindtree could consider increasing its resources skilled in cloud-based automated test environment provisioning and security testing in the U.S.

**2020 ISG Provider Lens™ Leader**

Mindtree, with its Dynamic Test Engineering Platform 4.0 and Digital Automation Framework, provides a strong foundation for continuous testing services. The services are further strengthened with its AI focus through industry partnerships and collaboration for feedback. This combination establishes Mindtree as a leader in continuous testing.
ENTERPRISE CONTEXT

DevSecOps Consulting

This report is relevant to enterprises across industries in the U.S., for evaluating providers providing DevSecOps consulting.

In this quadrant report, ISG highlights the current market positioning of providers of DevSecOps consulting in the U.S., based on depth of service offering and market presence.

Many enterprises, due to changing business needs, want to develop applications with greater speed, shorter time to market and shorter 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, as the data used by enterprises and end users is vulnerable. To cater to the needs of enterprises, service providers address the above challenges by following DevSecOps methodology in the application development lifecycle to ensure data security, integrity and non-violation of privacy.

ISG sees increasing demand among enterprises for cloud-native applications that are built end to end and managed on cloud using technologies such as containers and APIs. Enterprises must evaluate providers who can benefit them in addressing all the above challenges.
DevSecOps is a software development practice that combines development and technology operations in tandem to shorten the software development lifecycle and integrates security within the entire lifecycle. To achieve this, DevSecOps involves three key principles: system thinking, feedback loops and continuous experimentation and learning. Some of the methodologies involved in DevSecOps include lean management, continuous delivery and “people over process over tools.” Cloud-native applications are built end to end and managed on the cloud using technologies such as containers and APIs. Containers, as a part of the continuous integration/continuous development (CI/CD) methodology, are being used to decrease the infrastructure dependencies to develop applications faster.
Observations

- **Capgemini** is a DevSecOps leader because of its security integration within DevOps through its Agile4Security methodology, its ability to transform developers to accelerate shift-left operations and its use of automation frameworks.
- **Cognizant** takes a playbook-led delivery approach to DevSecOps. It combines this with its SX5 DevSecOps adoption framework, broad set of tools and accelerators, making it a leading service provider in DevSecOps.
- **HCL** has a wide range of capabilities across consulting, design and implementation. The company uses Agile, DevOps and automation under its ADVantage suite of proprietary assets to ease complexity and deliver value to its clients.
- **Infosys**’ DevSecOps practice is backed by investments around security, a large base of skilled DevOps professionals and a framework-led approach for clients in industries such as telecom and financial services.
- **TCS** has a large pool of practitioners trained in DevOps and Agile methodologies. The company leverages its Cognitive Delivery Platform and popular industry tools to be a leader in the DevSecOps domain.
- **Tech Mahindra’s** ADOPT platform, DevOps Model for transformation and investments in training initiatives through its Enterprise Academy for its employees make it a leader.
- **Wipro’s** RAPID Ops Framework, connected DevOps Toolchain and focused DevOps training initiatives make it one of the noteworthy players.

Eligibility Criteria

- Providers should be implementing methodologies such as infrastructure as code, continuous improvement, people over process over tools, feedback loops, Lean, kaizen and other principles.
- The provider should offer development teams with more than two to three years of training in scripting languages such as Python, Perl, Shell and Ruby, and in operating systems like Linux and Unix.
- DevOps teams should have application-level understanding of Git, Bucket (for source control), Jenkins, Bamboo (continuous integration), infrastructure automation (Chef, Puppet, Ansible), Docker and Kubernetes (containers), Mesos and Swarm (orchestration) among other areas.
- DevOps teams should be able to implement automation technologies and tools at any level from testing and operations to development.
- The provider should guide clients to improve how they manage and migrate applications to the cloud (public, private or hybrid) using multiple container technologies such as Docker and Kubernetes.
Methodology
METHODOLOGY

The research study "ISG Provider Lens™ 2020 – Next-gen Application Development & Maintenance (ADM) Services" 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 Application Development & Maintenance (ADM) Services 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
Authors and Editors

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Kartik Subramaniam is the Lead Analyst for SAP HANA and Application Development and Maintenance (ADM). He brings in close to 10 years of experience in primary as well as Secondary Research, Advisory and Consulting experience from leading IT companies such as Accenture, IBM, IDC and TNS. Kartik has worked on many Research and Advisory assignments in the areas of offering in application development and maintenance, multi layered/pace layered IT/applications, cybersecurity and infrastructure services. Apart from research, Kartik also worked closely with the strategy and sales teams providing insights on strategic planning for offerings and creating seller enablement deliverable through analytics at Accenture and IBM respectively.

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Arul has been working with ISG for more than two years and his area of expertise is on Application Development & Maintenance (ADM). During his tenure, he has developed content for ISG Provider Lens™ in the areas of Next-gen Application Development & Maintenance (ADM), SAP HANA and Leonardo Ecosystem and Data Analytics Services & Solutions. As part of ISG Provider Lens™, Arul is responsible for supporting research authors and authoring blogs about niche technologies, market trends and insights.
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Jan Erik Aase is a director and principal analyst for ISG. He has more than 35 years of collective experience as an enterprise client, services provider, ISG advisor and analyst. Jan Erik has overall accountability for the ISG Provider Lens™ reports, including both the buyer-centric Archetype reports and the Quadrant reports focused on provider strengths and portfolio attractiveness. He sets the research agenda and ensures the quality and consistency of the Provider Lens™ team.
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