ISG Provider Lens™

Digital Engineering Services

Design and Development (Product, Services, Experience)

A research report comparing provider/software vendor strengths, challenges and competitive differentiators

Customized report courtesy of:

HCL

QUADRANT REPORT | MAY 2022 | U.S.

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Digital services are recasting manufacturing and production sector.

The digital engineering space is witnessing a wide adoption of various technologies, spurred by the digital revolution in the manufacturing industry with its strong potential to drive productivity. Digital technologies that are used by production and manufacturing companies help create a data lake at all phases and stages of the production line, capturing every piece of information that can optimize or improvise the process in every dimension. On the other hand, traditional engineering methodologies are human intensive and offer reserved guidance and insights from the transactional data generated at every point.

Technology plays a crucial role in an open, complex and integrated engineering stream that spans various complex systems and platforms.

The processes, services and customer experience help define sustainability and relevance in the right market. Design and development activities have always been at the inception points of every engineering initiative. The U.S. has always led the way for adoption and innovation, given its large consumer base. Almost every new idea or concept is prototyped in this marketplace. Transformation and innovation are at their peak due to evolving work methods, and business models. As a result, service providers have changed their engineering strategies and adopted, developed and leveraged capabilities to cater to the core manufacturing and product development industries.

Digital services and engineering are a **powerful** combination.

Executive Summary

Midsized and big multinational engineering clients have elevated their demands on digital engineering services. This has been the driving force for providers to respond quickly and effectively by restructuring their capabilities in driving technology adoption. As a result, digital engineering transformation services have emerged, including new capabilities to support digital product design in real time and other competencies around data-driven product lifecycle management, intelligent manufacturing operations, and digital customer experience delivery services. The increased adoption is further driven by AI-powered R&D, autonomous testing, simulations, augmented and virtual reality applications, digital twins and predictive machine learning. Intelligent supply chains, Industry 4.0, intelligent connected machines and IoT are some of the critical enablers for engineering services transformation.

Platformization is a major trend in the U.S., leading to new developments. Innovation and research have become favored investment areas to create opportunities. Large engineering service provider companies have now directed their focus toward building non-traditional technical platforms that act as an enterprise service bus to incorporate with and connect to any platform spanning from engineering to user experience. This is driven further by the demand from manufacturers and OEMs for such integrative platforms. Studying user patterns and consumption trends helps product companies intelligently improvise the connected product experience by encompassing complementing services and products through a platform.

Processes and workflow phases have been digitized and automated, especially for connected and intelligent operations in discrete and process industries. As a result, integrated customer and user engagements see drastic changes at an operations level.

The infusion of technology from AI, machine learning and data analytics is improvising and presenting new dimensions to every engineering phase. Furthermore, the adoption of emerging technologies in the manufacturing and production sectors has spiked due to new consumer behaviors, an evolved set of requirements, new consumption mechanisms and educated clientele. As a result, there is constant pressure to re-engineer products that meet current and future market expectations.

Product definition in the engineering and manufacturing industries has changed after the digital revolution. Software products are an essential component of the entire value chain spanning from inception to experience. Almost all heavy manufacturing industries have started to refine digital products and analyze how end users, consumers and markets leverage products. Engineering service providers are building software by using innovative digital architecture, components and programs to redesign solutions and products. They also leverage methodologies, frameworks and practices from every technology engineering domain.

Furthermore, augmenting human and machine-generated data and advanced analytics tools are fueling the metaverse with futuristic technologies that have a powerful relevance and prominence in the engineering industry, transforming the entire spectrum of products across industries for modern times. Such technologies have helped enhance the skill matrix and engineering competencies, creating avenues for technology skills in the engineering sector.

Executive Summary

The use of emerging technologies has a drastic impact on many vital areas such as decarbonization that require immediate attention. The data points captured and processed through various dimensions at every transaction point provide insights that directly reduce friction, consumption and dissipation of natural resources, leading to optimized operations and high cost savings.

Digital engineering services form the core of manufacturing and production industries.

Provider Positioning

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	Design and Development (Product, Services, Experience)	Connected and Intelligent Operations — Discrete Industries	Connected and Intelligent Operations — Process Industries	Integrated Customer/ User Engagement and Experience	Platforms and Applications Services
Accenture	Leader	Leader	Leader	Leader	Leader
Accolite Digital	Product Challenger	Not In	Not In	Product Challenger	Not In
Capgemini	Leader	Leader	Leader	Leader	Leader
Caresoft Global	Not In	Market Challenger	Not In	Not In	Not In
Cognizant	Leader	Leader	Product Challenger	Leader	Leader
Cyient	Market Challenger	Market Challenger	Market Challenger	Market Challenger	Market Challenger
eInfochips	Contender	Contender	Not In	Not In	Contender
EPAM	Market Challenger	Market Challenger	Market Challenger	Market Challenger	Market Challenger
e-Zest	Contender	Contender	Contender	Contender	Contender
GlobalLogic	Leader	Rising Star ★	Not In	Rising Star ★	Leader

Provider Positioning

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	Design and Development (Product, Services, Experience)	Connected and Intelligent Operations — Discrete Industries	Connected and Intelligent Operations — Process Industries	Integrated Customer/ User Engagement and Experience	Platforms and Applications Services
HARMAN Digital Transformation Solutions (DTS)	Product Challenger	Rising Star ★	Product Challenger	Product Challenger	Product Challenger
HCL	Leader	Leader	Leader	Leader	Leader
Hexaware	Leader	Not In	Not In	Not In	Not In
Infostretch	Contender	Contender	Contender	Contender	Contender
Infosys	Leader	Leader	Leader	Leader	Leader
Itransition	Contender	Not In	Not In	Contender	Contender
KPIT	Not In	Market Challenger	Not In	Not In	Not In
LTTS	Leader	Leader	Leader	Leader	Leader
Mindtree	Product Challenger	Product Challenger	Product Challenger	Product Challenger	Product Challenger
Mphasis	Rising Star ★	Product Challenger	Not In	Leader	Rising Star ★

Provider Positioning

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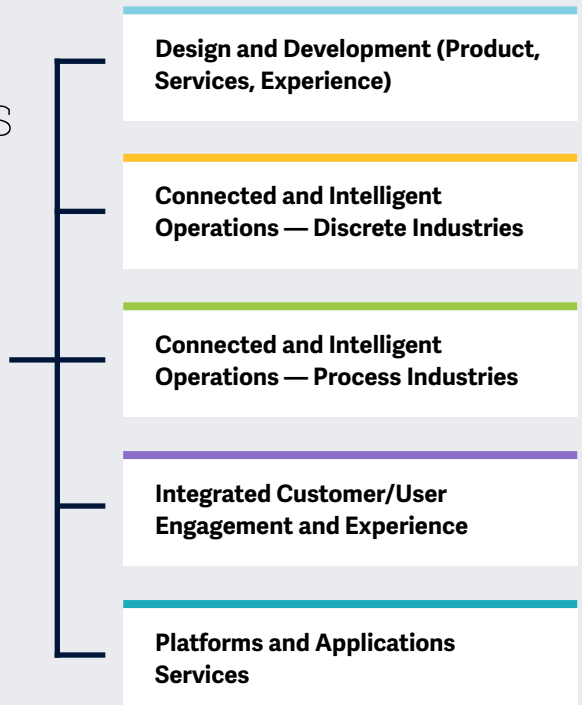
	Design and Development (Product, Services, Experience)	Connected and Intelligent Operations — Discrete Industries	Connected and Intelligent Operations — Process Industries	Integrated Customer/ User Engagement and Experience	Platforms and Applications Services
Persistent Systems	Product Challenger	Product Challenger	Product Challenger	Product Challenger	Product Challenger
Quest Global	Not In	Not In	Market Challenger	Not In	Not In
Tata Elxsi	Product Challenger	Product Challenger	Product Challenger	Product Challenger	Product Challenger
TCS	Leader	Leader	Leader	Not In	Leader
Tech Mahindra	Product Challenger	Leader	Product Challenger	Leader	Product Challenger
UST	Market Challenger	Market Challenger	Market Challenger	Market Challenger	Market Challenger
Virtusa	Product Challenger	Not In	Not In	Product Challenger	Not In
VVDN Technologies	Product Challenger	Not In	Not In	Product Challenger	Contender
Wipro	Leader	Leader	Leader	Leader	Leader
Zensar	Rising Star ★	Product Challenger	Not In	Rising Star ★	Rising Star ★

ISG perceives the Digital Engineering Services study as most critical in 2022.



Simplified Illustration Source: ISG 2022

Definition

Engineering services have undergone significant transformations in the recent past, with paradigm shifts observed in manufacturing and product development across industry spectrums ranging from automotive and aircraft OEMs to health tech and smart infrastructure systems developers. The U.S is one of the epicenters of large manufacturing e' supply chain and sourcing organizations that have seen a disruption in the process and management areas.With the rapid industrial application of AI, machine learning, predictive analytics, IoT, 5G, intelligent automation and other technologies, foundational engineering services such as product innovation, ideation, strategy and design, R&D and testing services, operations, product life cycle management (PLM) and aftermarket services have become digitized.

Digital engineering service providers in the U.S market are responding quickly and effectively to such demands from midsized and large global engineering clients. The market has moved in a synchronized manner toward digital engineering transformation services, providing new capabilities to support digital product design in real-time along with data-driven PLM, flexible intelligent manufacturing operations and digital customer experience delivery services. Key enablers for these engineering services transformations include AI-powered R&D, autonomous testing, simulations, augmented, virtual and mixed reality (AR/VR/MR) applications, digital twins, predictive machine learning applied to manufacturing and intelligent supply chains, Industry 4.0, IoT, advanced driver assistance systems (ADAS), smart connected machines and AIoT (Artificial Intelligence of Things).

Introduction

Changes in engineering services are further accentuated by the COVID-19 pandemic. For example, companies, industries and operations ranging from traditionally slow changing, highly regulated health tech and pharma R&D firms to manufacturing supply chains and distribution networks had to quickly reimagine, redesign and reinvent themselves by leveraging digital capabilities. The ISG Provider Lens™ Digital Engineering Services 2022 study analyzes these evolving trends with a deeper focus on product and service development, followed by connected and intelligent operations across discrete sectors such as automotive, aerospace, medical equipment for continuous and process industries. It also evaluates providers based on their customer experience on value delivery and associated competencies.

Scope of the Report

In this ISG Provider Lens™ study, ISG covers the following five quadrants: Design and Development (products, services, experience)

Connected and Intelligent Operations – Discrete Industries, Connected and Intelligent Operations – Process Industries, Integrated Customer/User Engagement and Experience, and Platforms and Applications Services.

This 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 regional market

Our study serves as the basis for important decision making in terms of positioning, key relationships and go-to-market considerations. ISG advisors and enterprise clients also use information from these reports to evaluate their existing vendor relationships and potential engagements.

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:

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

The ISG Provider Lens™ quadrants are created using an evaluation matrix containing four segments (Leader, Product Challenger, Market Challenger and Contender), and the providers are positioned accordingly. Each ISG Provider Lens quadrant may include service providers that ISG believes have 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).

Provider Classifications: Quadrant Key

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.

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.

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 products/services and a follow sensible market approach with a goal of becoming a Product or Market Challenger within 12 to 18 months.

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.

★ **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 above-average market impact and strength of innovation.

Not in means 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.

Design and Development (Products, Services, Experience)

Who Should Read This

The report is relevant for U.S.-based enterprises evaluating providers offering design and development services in digital engineering.

In this quadrant, ISG assesses the current market positioning of providers offering design and development services across products, services and experience. Enterprises partner with providers with end-to-end capabilities, from ideation to strategy to design and R&D, by leveraging their capabilities across design, prototyping and autonomous testing.

Enterprises partner with service providers that offer domain controllers that help in optimizing electronic control unit (ECU) hardware, reducing vehicle and harness weight and reducing costs. Enterprises are also embracing model-based structured developments that are feature-centric and aimed at reducing human errors while offering ease in upgrades and maintenance.

Engineering leaders should read this report to better understand the relative strength and weaknesses of digital engineering service providers offering design and development portfolios that can help lead the digital journeys for engineering practices.

Software development and technology leaders should read this report to understand the positioning of digital engineering service providers and how their offerings can impact an enterprise's transformation initiatives, while identifying the benefits of embracing a digital journey in the engineering space.

Manufacturing leaders should read this report to develop a better understanding of the current landscape of digital engineering service providers in the U.S.

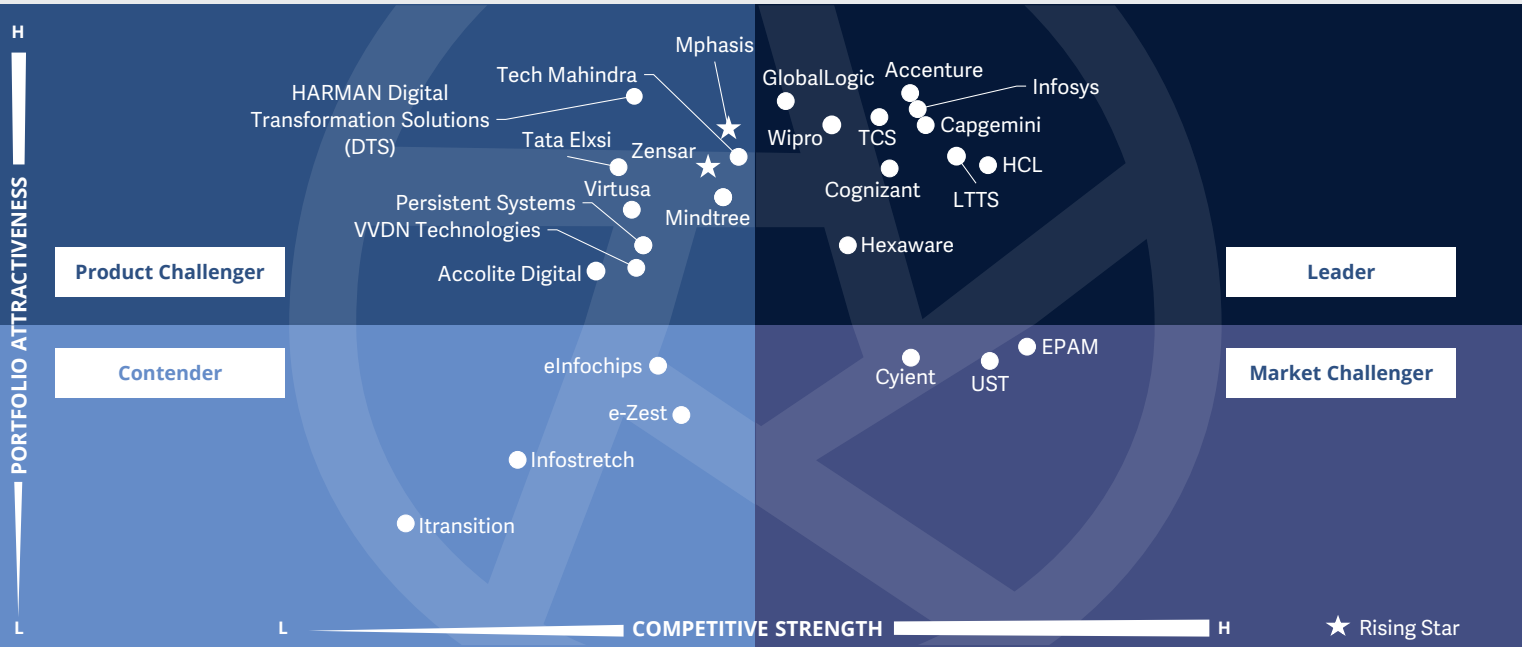
ISG Provider Lens™

Source: ISG RESEARCH

Digital Engineering Services

U.S. 2022

Design and Development (Product, Services, Experience)



Product development and feature augmentation are critical enabling capabilities for digital businesses. This quadrant assesses a provider's ability to provide **integrated data-driven product design and development** augmentation, from ideation and strategy to design and experience.

Tapati Bandopadhyay

Definition

This quadrant assesses a provider's ability to provide integrated hardware/software and new data-driven product development and feature augmentation, from ideation to strategy to design and R&D, by leveraging capabilities across rapid and agile design, prototyping and autonomous testing. Sample outcomes include faster product innovation cycles and time to market, smarter and more connected digital products, and an improved customer experience. The key enabling capabilities include design thinking and digital product design techniques.

Eligibility Criteria

1. Breadth of lifecycle coverage: support for product strategy, new product design and development, integration and scaling, and support/maintain stages along with proven experience in new product ideation
2. Innovation and engineering: use of design thinking capabilities, new product/service strategy formulation requirements analysis and market feedback/ research
3. Digital customer experience design competency: user/ persona-based journey mapping, design and storyboarding, UI/UX design, i service design and interaction design
4. Design for X capabilities: addressing security, quality and sustainability by design for cost
5. Digital technology and capabilities: covering new product/service/experience design such as using digital twins, rapid prototyping and testing, PLM, data and model-driven engineering, virtualization, cloud-native design, AI, machine learning, human-machine interface (HMI), conversational AI, IoT and AIoT, edge and 5G platforms
6. Ability to ideate, strategize, design and develop new connected digital experiences:use cases of virtualreality and extended/ immersive reality, additive manufacturing, 3D printingand other digital systems

Observations

The traditional engineering design and development space has been transformed to accommodate the needs for agility in the digital world. Design and ideation are the critical starting points of the digital transformation journey for both end-user industries and service providers.

Two unique aspects have emerged in this quadrant. The first involves the need for integrative talent – a combination of domain, imagination and digital tech capabilities to bridge new business possibilities with the realities of technology supply. The second deals with the shifting focus from pure technology skills to design capabilities as a way to address the intensified talent war in this emerging space.

From the 40 companies assessed for this study, 27 have qualified for this quadrant with 10 being Leaders and two as Rising Stars.

Accenture's strategy of self-funded capability building and acquisitions helps enterprises to leverage design services to pivot and platformize enterprise businesses.

Capgemini's vision of "designing now for the next generation," where digital technology is fully embedded, helps clients to create a value-based view to their business.

Cognizant's unique design approach of experience blueprinting, omnichannel, neumorphism and UX has helped clients to resolve current challenges or be a front runner in the industry.

GlobalLogic has a strategic design studio that offers a holistic approach to experience design. It focuses on strengthening the business brand, enhancing client relationships, and offering coherent and intuitive services.

HCL has a strong focus on delivering innovation across the digital engineering spectrum and building centers of excellence for industrial and user experience design solutions such as Stride and Edge. are helping the customers to accelerate customers journey in creating great experiences.

Hexaware leverages Mobiquity as a digital enabler to drive innovation for extended reality technologies and build other immersive techniques such as virtual tryouts for B2C and B2B markets.

Infosys' engineering design capabilities, along with its Kaleidoscope Innovation™ through the acquired Wongdoody, offers experience design to deliver capabilities spanning from strategy to detailed designs across different channels and touchpoints to create compelling user-centric experiences.

Design and Development (Products, Services, Experience)

LTTS offers unique skills beyond digital technology usage talent. Its imaginative engineering design approach helps in ideating and hcreating net new digital business offerings for clients.

TCS offers the right set of technologies, contextual knowledge of customer processes and industry domain expertise to provide clients with new opportunities for improvement.

Wipro aligns its design and development capability with Engineering NXT across a range of next-generation digital technologies to help clients design and develop cutting-edge products and product-enabled services and experiences.

Mphasis' Front2Back™ (F2B) approach ensures innovation, speed, and engagement. Its Experience Tribe offering effectively combines design methodologies with next-generation technologies to deliver innovative and relevant experiences. Mphasis is a Rising Star.

Zensar, with the acquisitions of Foolproof and Indigo Slate, along with its internal capabilities and labs, combines three of its five strategic growth opportunities (SGOs). These include experience, engineering, and data and analytics. Zensar is also a Rising Star.

Leader

"HCL offers a diverse and deep set of competencies in engineering design and development services."

Tapati Bandopadhyay

HCL

Overview

HCL is headquartered in Noida, India, and operates in 52 countries. It has over 197,000employees across 215 global offices. In FY22, the company generated $11.48 billion (+12/8percent YoY) in revenue, with IT and business services as its largest segment. It enables experience enhancement through seamless transactions, immersive experience and hyper personalized experience to provide UX design solutions to customers.

Strengths

Augmenting OT and Industry 4.0 capabilities: In 2021, HCL has seen significant traction for digital engineering design services especially in the cloud and digital platforms. It combines technology stacks with digital commerce as high-impact offshoots of data engineering and AI. In terms of operational technology (OT) and industry 4.0 capabilities, big data has augmented customer outcomes after an increase in the adoption of digital business channels.

Strong engineering workforce and workplace: HCL leverages its talent pool of more than 41,000 engineers and 100 engineering labs to accelerate digital technologies and engineering deployments across sectors. Most of the talent is concentrated on end-to-end engagements, maintaining continuity for clients in terms of quality of talent and innovations.

Continuous engineering design innovation: HCL has enhanced its focus on continuous innovations in engineering design and development, enabling it to develop more than 2,000 patents. With its diverse client base and highly experienced teams, the company effectively augments the quality of innovations through cross-pollination across domains.

Caution

With its wide range of offerings, rich experience and knowledge base, HCL's engineering design and R&D services are more suited for large clients and digital new-age companies for complex and pivotal projects with a strategic impact. Point projects with limited visibility won't be able to fully leverage its unique competencies.

Appendix

Methodology & Team

The ISG Provider Lens 2022 – Digital Engineering 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.

Lead Author:
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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 May 2022 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.

The study was divided into the following steps:

1. Definition of Digital Engineering 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 & use cases
4. Leverage ISG's internal databases & advisor knowledge & experience (wherever applicable)
5. Use of Star of Excellence CX-Data
6. Detailed analysis & evaluation of services & service documentation based on the facts & figures received from providers & other sources.
7. Use of the following key evaluation criteria:
   * Strategy & vision
   * Tech Innovation
   * Brand awareness and presence in the market
   * Sales and partner landscape
   * Breadth and depth of portfolio of services offered
   * CX and Recommendation

Lead analyst

Tapati Bandopadhyay
Lead analyst – U.S.

Dr. Tapati Bandopadhyay has been an inventor, builder, practitioner and researcher in AI, intelligent automation and related domains, for 25+ years. She has been a global practice leader and executive-level advisor & consultant, in AI-automation-cloud and services management, covering MLOps, AIOps, CloudOps, DataOps, ModelOps & DevOps metrics-driven practices and data and AI story-building and story-telling practices and tools. As an ISG Lead Analyst on AWS and in AI-ML, consulting & managed services, she is responsible for defining and leading the ISG Provider Lens branded research projects, for the US market.

Senior Research Analyst

Srinivasan PN
Senior Research Analyst

Srinivasan PN is a senior research analyst at ISG and is responsible for supporting and co-authoring ISG Provider Lens™ studies on AWS & Google Ecosystem, Digital Engineering, Manufacturing and Mainframe. His area of expertise lies in the space of engineering services and digital transformation. Srinivasan comes with 8 years of experience in the technology research industry and in his prior role, he carried out research delivery for both primary and secondary research capabilities. Srinivasan also authors enterprise context reports and global summary reports for each of his expertise areas. Along with this, he supports the advisors with his research skills and writes papers about latest market developments in the industry.

IPL Product Owner

Jan Erik Aase

Partner and Global Head – ISG Provider Lens

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.

ISG Provider Lens™

The ISG Provider Lens™ Quadrant research series is the only service provider evaluation of its kind to combine empirical, data-driven research and market analysis with the real-world experience and observations of ISG's global advisory team. Enterprises will find a wealth of detailed data and market analysis to help guide their selection of appropriate sourcing partners, while ISG advisors use the reports to validate their own market knowledge and make recommendations to ISG's enterprise clients. The research currently covers providers offering their services across multiple geographies globally.

For more information about ISG Provider Lens research, please visit this webpage.

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ISG

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Founded in 2006, and based in Stamford, Conn., ISG employs more than 1,300 digital-ready professionals operating in more than 20 countries—a global team known for its innovative thinking, market influence, deep industry and technology expertise, and world-class research and analytical capabilities based on the industry's most comprehensive marketplace data. For more information, visit www.isg-one.com.

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MAY 2022

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