

Digital Engineering Services

A research report comparing
provider strengths, challenges
and competitive differentiators

Customized report courtesy of:



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Digital engineering capability is at the forefront of business transformation initiatives

Industries and businesses are recording a rise in the number of digital products with the development of tools, techniques and capabilities that collaborate and connect in various ways. Cloud-based, no-code, low-code, scalable, resilient and secure platforms are in high demand because they efficiently deliver digital engineering services, including design, experience, operations and applications, across industries. Platform engineering toolchains enable self-service capabilities and help address end-user requirements.

The digital twin technology is driving digital engineering adoption in various ways because it helps in the accurate design and testing of products and systems, provides real-time data on physical asset performance, improves maintenance, refines data analysis and reduces downtime.

Digital platforms play a vital role in delivering business objectives by developing solutions that combine various systems and components. Technology and software vendors strive to provide end-to-end system integration services rather than point solutions. This growing association among niche technologies leads to innovative solutions, such as private 5G networks and edge/multiaccess edge computing, modernizing deployments, design engineers and managed services. It also includes platform integration with telecom cloud platforms, testing, automation and orchestration.

The 5G technology is frequently paired with AR and VR technologies, facilitating immersive experiences for customers. The high speed and low latency power IoT applications with use cases in smart cities, connected cars and industrial automation.

Several technologies and tools ensure digital resilience with a structural framework and multilayer architecture. Applications must have immediate threat and risk management capabilities and ensure seamless business continuity, considering they operate on

The industry is experiencing a massive surge in demand for digital engineering services due to the convergence of emerging technologies.



multimedia operations and are exposed to various internal and external environments. A digital system leverages AI to enable observability, auto-remediation, chaos engineering, supply chain security and site reliability. Applied actions involve observing data in real time using technologies such as AIOps, automation and ML to minimize delays in decision-making. Combining Scrum and Kanban methodologies ensures regular process iterations and continuous workflow and eliminates batch processing.

The need to increase awareness of and practice sustainability is among the top three focus areas of every business portfolio. Sustainability requires across-the-board design reengineering linking systems to provide a unified view of an enterprise. Manufacturers must reinvent the entire design blueprint across the extended value chain, embedding sustainability in processes, products, operations and recycling. Value chain partners must take an ecosystem-based approach, focusing on neural manufacturing, to fulfill sustainability commitments. This approach also helps meet regulatory requirements dynamically, attract

investors and drive growth.

Metaverse is the new and futuristic driver that enhances CX and customers' interaction with a company's products and services. Although it has valuable use cases in digital engineering and manufacturing, its operationalized usable model in these industries is yet unseen. It helps test virtual prototypes and enables stakeholders to get a real-time experience, thereby helping in gauging customer interest.

Design for manufacturing (DFM) helps address supply chain disruptions and margin pressures. It also assists in designing and developing parts cost-effectively. It bridges the communication and collaboration gaps between design engineers and suppliers before a product enters production, mitigating potential supply chain issues, reducing costs and maintaining quality. Via 3D prototyping, DFM empowers stakeholders to collaborate and recalibrate designs in real time. It improves fault tolerance levels and reduces sourcing and redesign issues, preventing costly late-stage redesign, additional material costs and product failure or recall. It also helps train junior staff quickly and precisely. From a sustainability standpoint,

DFM reduces cycle times, lowering the manufacturing carbon footprint and optimizing the product development cycle.

1. The benefits of adopting digital engineering services include the following:
2. Reusable models - Digital twin models can be saved and reused after suitable modification in the future.
3. Reusable models - Digital twin models can be saved and reused after suitable modification in the future.
4. Broad suite of industrial applications – These applications range from a plant to an entire company, which can be quickly designed and implemented.
5. Proactive maintenance – This is made possible by embedded IoT devices, which generate real-time sensor data.
6. User and CX monitoring – User and customer engagement can be better tracked using mobility solutions to optimize costs.

The adoption of digital engineering services in the U.S. market

About 40 percent of U.S. manufacturing companies are yet to adopt digital engineering services and leverage AI/ML, Industry 4.0, IoT and cloud computing. However, U.S. industries are warming up to digital engineering, which pivots around innovation by validating concepts, observations and analytics. Digital twins enhance testing capabilities, predict outcomes and mitigate risks. Cloud technology providers such as AWS also play a key role in promoting engineering in the digital space by providing industry-vertical solutions. Furthermore, the best practices followed by the aging workforce in the U.S. can be identified and institutionalized to empower the next-generation workforce through a digital UX on workstations and mobile devices.

Quality engineering (QE) is a discipline gaining prominence as it ensures standardized outcomes at every solution development point. It is a systematic approach to ensure the quality of products, services or processes throughout their lifecycle. It involves the application of engineering principles, methodologies and tools



to design, develop, test and maintain systems that meet or exceed customer expectations and regulatory requirements. Quality engineering aims to minimize defects, reduce variability and optimize performance while maintaining cost-effectiveness and efficiency. Digital engineering processes encompass critical aspects, including quality planning, design for quality, process improvement, quality control, verification and assurance.

The track and trace capability refers to the ability to monitor the movement and location of products throughout the supply chain, from manufacturing to their distribution to end customers. This capability is critical for product quality and safety and regulation compliance. In the U.S. market, the track and trace capability is essential for pharmaceuticals, food and beverages, and consumer goods. Track and trace systems typically rely on various technologies, such as barcodes, QR codes, RFID tags and GPS tracking, to provide real-time information about product location, status and condition.

Digital engineering plays a pivotal role in Industry 4.0. The manufacturing industry will become increasingly lean and agile using technologies such as 3D printing, robotics and artificial Intelligence of Things (AIoT).

However, some sectors that are poised for drastic changes include the following:

- In the healthcare sector, digital engineering can help develop innovative medical devices, improving patient experience and reducing costs. For example, VR and AR can help monitor patients' vital signs remotely and enable quick medical help.
- Another use case is the transport sector, where digital engineering services are revolutionizing the industry with inventions such as self-driving cars and ride-hailing apps, facilitating easy transport availability.
- The retail sector also holds immense potential, where digital engineering services can enhance CX and reduce operating costs.

- In the financial services sector, online and mobile banking has enabled anywhere, anytime banking. Newer technologies such as blockchain improve the security and transparency of financial transactions.
- In the education sector, digital engineering helps improve learning outcomes while increasing affordability.

M&A in the digital engineering space may slow down in H1 2023 due to the macroeconomic headwinds of high-interest rates, inflation and tepid investor interest. However, private equity will be key to future funding opportunities. Cloud computing tops the M&A agenda, while technologies such as 5G and metaverse intrigue investors. This is followed by AI/ML, where monetization is the primary hurdle. Through the next decade, market consolidation will likely gain more steam. Sectors of investor interest continue to be FinTech, healthcare, life sciences and sustainability.

More critical than cloudification is the data migration to the cloud. Integrating AI and data engineering will facilitate rapid decision-making and issue resolution. Anything-as-a-service

(XaaS) will gain momentum as ecosystem partners deliver platform-based tailored solutions to users anywhere, any time.

Integrating AR/MR into mobility devices will not only widen their reach and adoption but also open the doors to new revenue streams. Use cases include field support, training and development, and tech support, resulting in immense cost savings. Private 5G networks powered by private cloud services will ensure the much-needed cybersecurity for the struggling industry.

Vendors can deploy self-service tools, provide empathetic real-time assistance, embark on omnichannel deployment and leverage Web 3.0 and metaverse for an immersive experience, improving CX. Intelligent operations, coupled with Industry 4.0, facilitate interconnectivity, digitalization and automation enabled by IoT, additive manufacturing, cloud computing, edge computing, analytics, robotics, cybersecurity, AI/ML and AR/VR. Furthermore, intelligent mobility garners a large proportion of engineering and R&D spend.



Vendors are responding to customers' changing expectations by building frameworks and accelerators for architecting, designing, building, testing and integrating digital twins. The market is also witnessing the entry of nimble new-age players that, with chipsets, autonomous driving algorithms and cloud capabilities, are intensifying the competition with incumbents. Employees are also focusing on reskilling to become agile and cross-integrate horizontal capabilities. Additionally, ongoing macroeconomic challenges have led to budget cuts, which are more maintenance-oriented than innovation-centric. However, budgets will likely increase after recessionary trends moderate.

Today's customers demand a complete portfolio of digital solutions that are original and protected by IP rights. This spans the product lifecycle development, comprising consulting, design, development, verification and validation, deployment and system integration, and managed services and support.

A digital engineering service suite must include collaboration tools, a centralized data repository, computer-aided design (CAD) tools, supply chain integration, inventory management, ERP and change management.

Business leaders are turning toward digital engineering to manage evolving customer expectations during macroeconomic headwinds and enhance their profit margins.



Provider Positioning

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	Design and Development (Product, Services, Experience)	Integrated Customer/ User Engagement	Platforms and Applications Services	Intelligent Operations
Accenture	Leader	Leader	Leader	Leader
Accolite Digital	Product Challenger	Product Challenger	Not In	Not In
Akkodis	Product Challenger	Product Challenger	Product Challenger	Product Challenger
Apexon	Contender	Contender	Contender	Contender
Capgemini	Leader	Leader	Leader	Leader
Caresoft Global	Not In	Not In	Not In	Market Challenger
Cigniti	Product Challenger	Product Challenger	Product Challenger	Contender
Cognizant	Leader	Leader	Leader	Leader
Cyient	Market Challenger	Market Challenger	Market Challenger	Leader
DXC Engineering	Product Challenger	Product Challenger	Product Challenger	Product Challenger



 Provider Positioning

	Design and Development (Product, Services, Experience)	Integrated Customer/ User Engagement	Platforms and Applications Services	Intelligent Operations
elinfochips	Product Challenger	Not In	Contender	Contender
Encora	Contender	Contender	Product Challenger	Contender
e-Zest	Contender	Contender	Contender	Contender
GlobalLogic	Leader	Leader	Leader	Leader
Happiest Minds	Rising Star ★	Rising Star ★	Rising Star ★	Product Challenger
HARMAN DTS	Leader	Leader	Rising Star ★	Product Challenger
HCLTech	Leader	Leader	Leader	Leader
Hexaware	Leader	Leader	Leader	Not In
IBM	Product Challenger	Product Challenger	Leader	Not In
Infinite Computer Solutions	Product Challenger	Product Challenger	Product Challenger	Rising Star ★



 Provider Positioning

	Design and Development (Product, Services, Experience)	Integrated Customer/ User Engagement	Platforms and Applications Services	Intelligent Operations
Infosys	Leader	Leader	Leader	Leader
ITC Infotech	Product Challenger	Product Challenger	Product Challenger	Product Challenger
LTIMindtree	Leader	Leader	Product Challenger	Leader
LTTS	Leader	Leader	Leader	Leader
Motherson Technology	Product Challenger	Product Challenger	Product Challenger	Product Challenger
Mphasis	Product Challenger	Product Challenger	Product Challenger	Product Challenger
Persistent Systems	Rising Star ★	Rising Star ★	Leader	Leader
Sonata Software	Product Challenger	Product Challenger	Product Challenger	Product Challenger
Tata Elxsi	Product Challenger	Product Challenger	Product Challenger	Product Challenger
TCS	Leader	Leader	Leader	Leader



 Provider Positioning

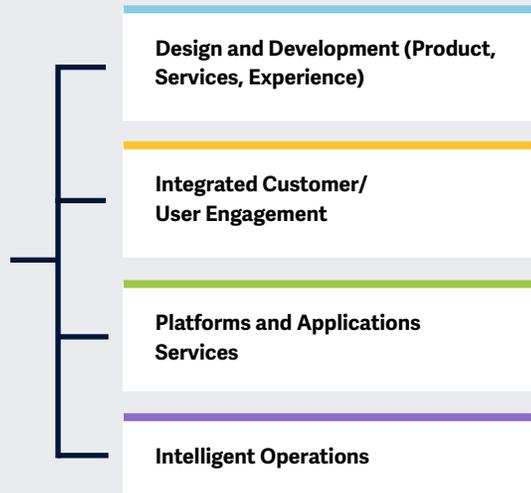
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	Design and Development (Product, Services, Experience)	Integrated Customer/ User Engagement	Platforms and Applications Services	Intelligent Operations
Tech Mahindra	Product Challenger	Product Challenger	Product Challenger	Leader
UST	Market Challenger	Market Challenger	Market Challenger	Market Challenger
Wipro	Leader	Leader	Leader	Leader
Zensar	Product Challenger	Product Challenger	Product Challenger	Product Challenger



Key focus areas for Digital Engineering Services 2023

Simplified Illustration Source: ISG 2023



Definition

Business context and technology changes are the key drivers for engineering services. Business imperatives drive metrics such as faster product lifecycle and release of new products and variants in a short time. They also fuel the adoption of virtual prototyping to reduce the risks involved in design cycles and thus optimize iterations, time and cost during engineering stages. Technology trends such as mobility, big data, AI/machine learning, Industrial Internet of Things (IIoT) and predictive analytics impact the entire value chain to become increasingly visible, trackable, reliable, consistent, controllable and, hence, predictable. This has resulted in the digitalization of the entire value chain – right from product inception to manufacturing and across the industry spectrum, including foundational engineering services, such as product innovation, ideation, strategy and design, R&D, operations, product lifecycle management (PLM) and aftermarket services. Track and trace have gained importance in building the genealogy of a product and its history during

the value-add. Testing and validation processes have also become evident as the product moves digitally toward the consumer.

Over the years, the digital element has grown significantly to get the advent of the physical and virtual model called digital twins into existence. Digital trends like Industry 4.0, which are augmented by IIoT and artificial intelligence of things (AIoT), take engineering to a newer orbit to be an automated, smart, intelligent and controllable ecosystem. The market has moved in a synchronized manner toward digital engineering transformation services to provide overarching digital product strategy, providing new capabilities of real time and concurrent digital product design, along with data-driven PLM, flexible intelligent manufacturing operations and digital CX delivery services.

The ISG Provider Lens™ Digital Engineering Services 2023 study analyzes these evolving trends with a deeper focus on product and service development, followed by connected and intelligent operations across sectors. It also evaluates providers based on their CX design, platform engineering, aftermarket value delivery and associated competencies.



The ISG Provider Lens™ Digital Engineering Services report offers the following to business and IT decision-makers:

- Transparency on the strengths and weaknesses of relevant providers.
- A differentiated positioning of providers by segments on their competitive strengths and portfolio attractiveness.
- Focus on different markets, including the U.S. and Europe

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

Scope of the Report

In this ISG Provider Lens™ quadrant report, ISG covers the following four quadrants for services/solutions: Design and Development (Products, Services and Experiences), Integrated Customer/User Engagement, Platforms and Applications Services, and Intelligent Operations.

This ISG Provider Lens™ study offers IT decision-makers with the following:

- Transparency on the strengths and weaknesses of relevant providers
- A differentiated positioning of providers by segments (quadrants)
- 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 providers for a defined market segment (quadrant). Without further additions, the position always applies to all company sizes classes and industries. In case the service requirements from enterprise customers differ and the spectrum of providers operating in the local market is sufficiently wide, a further

differentiation of the 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 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 & Market Challenger and Contender), and the providers

are positioned accordingly. Each ISG Provider Lens™ quadrant may include a service provider(s) which ISG believes has strong potential to move into the Leader quadrant. This type of provider can be classified as a Rising Star.

- **Number of providers in each quadrant:** ISG rates and positions the most relevant providers according to the scope of the report for each quadrant and limits the maximum of providers per quadrant to 25 (exceptions are possible).





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
(Product, Services,
Experience)

Design & Development (Product, Services and Experiences)

Who Should Read This Section

The report is relevant for U.S.-based enterprises evaluating providers that offer design and development services across the product development lifecycle.

In this quadrant, ISG assesses the current competitive positioning of providers based on the service portfolio that includes ideation and strategy, design, prototyping and quality testing.

With an agile development model, enterprises expect product development and delivery to happen faster with multiple release cycles. The need for seamless design and development drives the providers to build strong architectural and testing capabilities with extensive use of specialized tools and infrastructure. Enterprises expect providers to have improved capabilities and incorporate the latest developments in design, such as animations and soft shadows, floating elements, AR/VR and interactive features. Providers are also expected to reskill their talent ecosystem and establish design studios to cater to clients' design needs in multiple locations.

Enterprises seek providers offering personalized services such as platformization, digitalization and modernization, with expertise across hybrid and native cloud environments.



Chief Digital Officers should read this report to understand the developments in the industry, enabling them to choose and partner with the right provider that can transform their digital landscapes.



Engineering leaders must read this report to comprehend the relative strengths and weaknesses of providers offering design and development services in the digital engineering space.



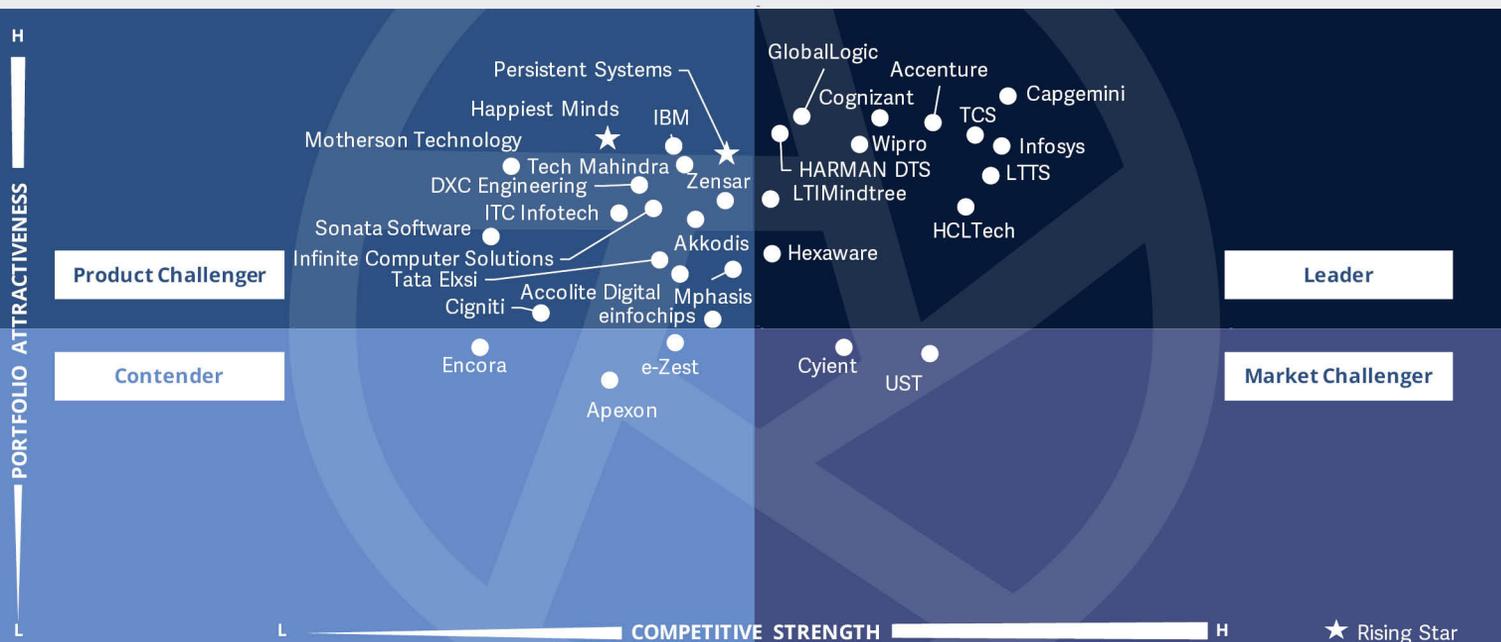
Software development and technology leaders should read this report to understand the relative positioning of providers and how their digital engineering offerings can impact an enterprise's transformation initiatives.



ISG Provider Lens™
 Digital Engineering Services
 Design and Development (Product, Services and Experiences)

Source: ISG RESEARCH

U.S. 2023



Design and development are essential set of processes that **transform requirements into specified characteristics and functionalities**. This Quadrant **evaluates the disciplines, best practices, and methodologies** that service providers apply to **deliver an augmented strategy to fulfill business and customer demands**.

Dr. Tapati Bandhopadhyay



Design & Development (Product, Services and Experiences)

Definition

This quadrant assesses a provider's ability to deliver integrated hardware/software and new data-driven product development and feature augmentation services. These services range from ideation and strategy to design and R&D, leveraging capabilities across rapid and agile design, prototyping and quality testing. A few outcomes include faster product innovation cycles and time to market, smarter and more connected digital products and an improved CX. Key enabling capabilities include design thinking and digital product design techniques. This encompasses product design, development and engineering perspectives to cover the new product introduction (NPI) process, right from the ideation and building of the concept to prototyping and pilot runs of the product or services under consideration. This is known as Idea to Realization to validate the new product ideas in the form of new features to be added to the existing product.

The tools and techniques used to track the design changes across the value chain of the NPI process are enabled by technologies such as computer-aided design (CAD), computer-aided manufacturing (CAM) and computer-aided engineering (CAE).



Eligibility Criteria

- 1. Breadth of lifecycle coverage:** Support for product/service combinations and digital business platform development strategy, new product/service/business design and development capabilities, integrate and scale, and support/maintain stages
- 2. Proven experience in ideation, innovation and engineering of digital value offerings:** Use of design thinking capabilities, new product/service strategy formulation requirements analysis, market feedback/research
- 3. Digital CX design competency:** User/persona-based journey mapping, design and storyboarding, UI/UX design, industrial design, service design and interaction design
- 4. New software operating models:** Ability to support agile, continuous and rapid development, CI/CD and continuous testing unit and integration processes
- 5. Digital technology and capabilities:** Covering new product/service/experience design such as using digital twins, rapid prototyping, autonomous and continuous testing and quality management through platforms/solutions/testbeds, PLM, data and model-driven engineering
- 6. Ability to ideate, strategize, design and develop new connected digital experiences:** Functionality and use cases of AR/VR/MR and extended/immersive reality, additive manufacturing, 3D printing, linked services, products, features and other digital systems, networks and value chains



Design & Development (Product, Services and Experiences)

Observations

Digital twins are a critical part of design and development, and they generate an illustration of physical to virtual connection, analyze and visualize a product's lifecycle, from ideation and building the concept to prototyping and pilot runs. Digital design capabilities necessitate architectural transformation, product reengineering, cloudification and performance management. Architectural transformation involves the use of agile technologies and interoperable omnichannel-enabled apps and systems. Product reengineering helps drive topline growth, while cloudification helps optimize costs, reduce downtime and maintenance, and ensure business continuity and rapid application deployment, among others.

A few trends that are being observed in the DES space are as follows:

- 3D models, coupled with digital engineering, are changing the design and development landscape. New tools, such as AR, facilitate

the modeling of virtual objects and interaction and iteration within the AR environment.

- Furthermore, CAD files can be displayed in AR, which helps modify objects according to clients' requirements. Multiple CAD files can be uploaded in real-time, facilitating collaboration and teamwork. Designs can also be reproduced without data loss and true to scale.
- However, companies can realize the full potential of digital product development only if they standardize different databases and design methods. The display of design drafts in an AR environment simplifies complicated processes in the industry, spanning from prototyping and factory planning to quality control. This involves adopting a multicloud strategy, edge-enabled computing, CI/CD-enabled release management, and others.

From the 48 companies assessed for this study, 33 have qualified for this quadrant, with 12 being Leaders and two Rising Stars.

accenture

Accenture helps its clients ideate and develop digital applications for the future, resulting in scalable and effective solutions for end customers. Its multidisciplinary teams and innovation labs execute digital transformation and optimize clients' business processes.

Capgemini

With its design processes, **Capgemini** achieves standardized operations, data continuity and predictable ROI for its customers. It offers end-to-end design, development and test-to-prototype support. It uses in-house design agencies, such as Frog (a part of Capgemini Invent), to deliver digital transformation.

cognizant

Cognizant has a relatively better positioning this year as it continues to build on its horizontal and vertical capabilities with

acquisitions such as Devbridge, Utegration and ESG Mobility. It has global expertise in large-scale design and development projects.

GlobalLogic

GlobalLogic expanded its client base in the U.S. and Europe by acquiring Fortech, which also enhanced its design and engineering offerings while building vertical capabilities. Leveraging its synergy with Hitachi, GlobalLogic delivers end-to-end solutions for experience design and building and optimizing products.

HARMAN DTS

HARMAN DTS made substantial progress over the last year. It has moved to the Leader position this year from being a strong Product Challenger in the previous year. The company enables customer transformations using emerging technologies and by combining research, branding and design.



Design & Development (Product, Services and Experiences)

HCLTech

HCLTech has expanded its capabilities and digital engineering presence into new geographies through recent acquisitions. The company has multidecade experience in working with engineering customers. It has consulted and supported many enterprise customers to migrate from legacy systems to next-gen platforms.



Hexaware operates its design centers in the U.S. and Europe. Its Digital Traction framework facilitates clients to innovate and co-create their digital transformation journeys.



Infosys has a human-centric approach to systems design, and it leverages emerging technology to solve specific customer problems. It incorporates sustainability into its designs for intelligent and connected products.



With the combined strength of two system integrators, **LTI Mindtree** has advanced to the Leader's board from a Product Challenger last year. With its strong advisory practice, the company provides end-to-end offerings to customers.

LTTS

LTTS delivers digital engineering using advanced design and simulation tools. It uses solution accelerators such as virtual manufacturing for process planning, design for excellence (DFX) and DigiServe aftermarket services transformation with PLM and AR/VR. LTTS opened two new design and prototyping CoEs in 2022 in Peoria, Illinois, U.S. and R&D centers in Canada.



TCS provides scale in manufacturing through the iON solution to automate, digitalize, conceptualize and design. It supports an innovation ecosystem through its Co-Innovation Network (COIN) and R&D labs. TCS opened a new TCS CPG Innovation Hub in 2022 to create use cases in Industry 4.0 and the digital supply chain.



The foundations of **Wipro's** integrated services have a strong pillar in its design, strategy and technical consulting teams. Wipro acquired Convergence Acceleration Solutions in November 2022 to strengthen its consulting capabilities for telecom providers.

Happiest Minds

Happiest Minds has a domain-led consulting approach in a highly verticalized market with proprietary frameworks such as proprietary Test Maturity Assessment (TMA) to assess the customer state of products and processes.



Persistent Systems is well-placed to understand customers' requirements for digital business acceleration and enables them to achieve a design-led transformation. The company helps customers redefine and reimagine their business models, revenue streams and CX.





“Capgemini’s Applied Innovation Exchange offers a holistic opportunity for its U.S. clients to enhance their design capabilities using innovation.”

Dr. Tapati Bandhopadhyay

Capgemini

Overview

Capgemini is headquartered in Paris, France and operates in 50 countries. It has more than 359,600 employees. In FY22 the company generated \$22 billion in revenue, with Applications and Technology as its largest segment. Capgemini provides a combination of market insights, products and service development, ranging from technology strategy and concept definition to manufacturing and operation. The recent addition of Frog has helped drive customer-centric transformation while offering a range of services and innovative products that benefit clients.

Strengths

Amalgamation of domain and digital tech talent: The design and development teams from Capgemini, skilled in technology engineering, help clients build domain-relevant, industry-focused, integrative, yet flexible solutions.

Governance, risk and compliance (GRC) and environmental, social and governance (ESG) awareness in design: Capgemini is one of the few players that combine the awareness of region-specific and industry-specific GRC and ESG norms, from the ideation and design to prototype stages. This approach is specifically relevant for the U.S. market that has mature, highly regulated industries and government clients.

Applied Innovation Exchange: Capgemini’s Applied Innovation Exchange, a fast digital experimentation and lateral ideation, Invent/Frog, Cambridge Consultants and testing environment, enables clients worldwide, including those in the innovation-receptive U.S. market, to stay focused on building and trying out digital technology use cases and solutions that are closely relevant to their specific industries and organizational realities. This realistic approach to design and innovation limits the chances of failure and helps clients get the most optimal ROI.

Caution

Capgemini takes an integrative approach to digital design, which is comprehensive and mature. However, it may also lead to large and complex scope of work and may slow down innovation cycles. The company should consider making its innovation processes more agile in the coming years.





Integrated Customer/ User Engagement

Integrated Customer/User Engagement

Who Should Read This Section

The report is relevant for U.S.-based enterprises evaluating providers offering integrated customer and user engagement through aftermarket services.

In this quadrant, ISG assesses the current competitive portfolio of providers that offer intelligent aftermarket services to deliver customer and product support through digital platforms such as AI-enabled customer services, virtual agents, self-service knowledge support, and field support using AR/VR technology.

Enterprises are obliged to deliver services with greater customer/user experience. This demands providers to have an organization-wide strategy to guide, develop and implement the services are embedded with intelligent capabilities. Many enterprises are shifting from the mindset of nice-to-have experience improvements to must have. This change requires providers to invest in talent building and the right model because they must fit for purpose and the future.

A few challenges that hinder the vision of enterprises and providers include budget pressures, scalability, delivery quality and market speed. Providers must have an agile mindset across the teams to overcome these challenges.



Chief Digital Officers should read this report to understand the developments in the industry, enabling them to choose and partner with the right provider that can transform their digital landscapes.



Engineering leaders must read this report to comprehend the relative strengths and weaknesses of providers offering intelligent aftermarket portfolios in the digital engineering space.



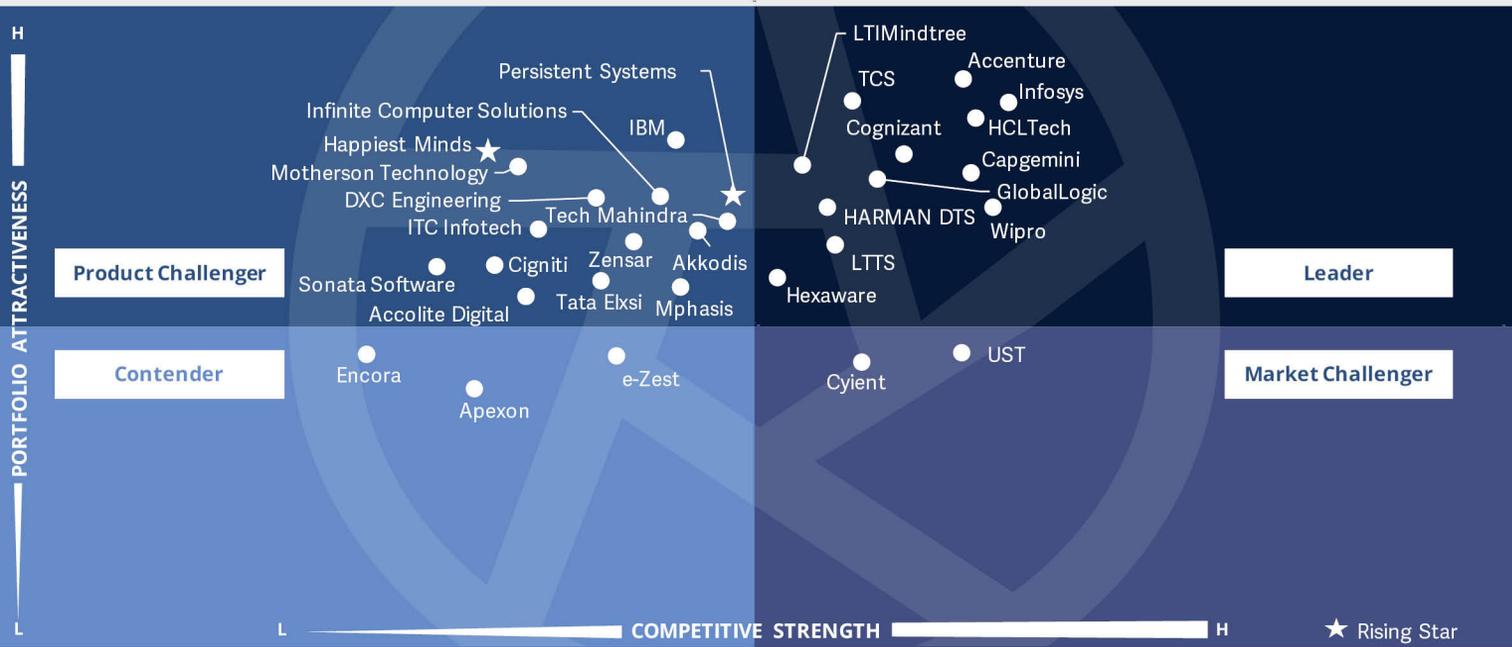
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ISG Provider Lens™
 Digital Engineering Services
 Integrated Customer/User Engagement

Source: ISG RESEARCH

U.S. 2023



Integrated customer and user engagement use **advanced technologies to seamlessly engage, capture and translate customer-user interactions** at every stage of their digital journey. The quadrant assesses the provider's capability to **employ real-time experience, augmented intelligence and smart devices** across the offerings portfolio.

Dr. Tapati Bandhopadhyay



Integrated Customer/User Engagement

Definition

This quadrant covers providers that use intelligent aftermarket services to deliver customer services and product support through digital platforms. The key capabilities for the providers in this space include the provision of AI-enabled customer services, virtual agents, self-service knowledge support, remote services and field support using AR/VR technology, remote services using drones and real-time experience management.

Customer and user engagement services are crucial as they directly affect the customer and the end-users of the product or services. The degree of customer satisfaction achieved vs their expectations eventually influences their repeat purchase decision and forms a key element in success. Feedback in the form of the voice of the customer (VoC) from various down-the-line digital sources plays a vital role in making the process self-learning, auto-correcting and, hence, most relevant to the customer, as well as the CX providers.

Eligibility Criteria

- 1. Breadth of industry coverage**
- 2. Predictive maintenance competency:** Use of data analytics, AI and machine learning in maintenance, field service management and self-healing services
- 3. Warranty management, lifecycle management and maintenance, repair and operations (MRO) capabilities:** Focus on digital experience platforms service, customer engagement, query resolution and support
- 4. Innovation in aftermarket services interfaces:** Including UI/UX design and engineering and product/service personalization
- 5. Experience with new business and service models:** Using IoT technologies, AR/VR-powered digital avatars and virtual customer care assistants, real-time knowledge support, and predictive actions suggestion engines to provide remote in-field customer service and help
- 6. Content delivery capability:** Autonomous and intelligent content distribution, on-demand, AI-powered self-service knowledge help, such as using NLP, natural language understanding (NLU), natural language generation (NLG), conversational AI and virtual agent support
- 7. Leverage customer and market feedback (VoC):** Value-added utilization of customer, field and market feedback across all relevant channels, including social media and web
- 8. Track-and-trace capability across the value chain**



Integrated Customer/User Engagement

Observations

Vendors work closely with clients' teams to support their digital and cloud transformation journeys. They assess and lay out a road map for clients to integrate, test, release and operate systems. AI-powered customer service allows clients to gain deeper insights and build a better UX. These services not only improve customer retention rates, brand image and preventive help but also drive revenue. Modern AI solutions go beyond chatbots and offer new perspectives with ML and NLP technologies. Additionally, a voice of the customer (VoC) program can help organizations gauge their current performance or improve a business function or product.

A few trends in the CX/UX space are as follows:

- Vendors are offering warranties as a service under a post-sale customer engagement strategy instead of an additional cost. CX-led warranty management has two advantages. First, it improves transparency and reduces warranty payouts and false claims. For instance, automotive suppliers pay only 10 percent of the industry's warranty costs

against the specified 37 percent. Secondly, it increases revenues and profits by offering tailored solutions.

- Digital twins can design a predictive maintenance detection algorithm for the equipment operator, automating quick configurations.
- Vendors offer digital self-service portals and content management platforms on the cloud. This facilitates integrating different systems to auto-populate service requests with site and asset data. Its advantages include pre-validated recommendations for minimum rejections, simplified workflows to create and track real-time requests, and new features.

From the 42 companies assessed for this study, 32 have qualified for this quadrant, with 12 being Leaders and two Rising Stars.

accenture

Accenture imbibes user feedback early on by leveraging the support of UX/UI experts at the application development stage; this ensures higher customer satisfaction and higher adoption.

Capgemini

Capgemini helps customers get enhanced visibility and insights into operations through real-time status updates and visual metrics. It has a proprietary requirement and experience design methodology, such as Rapid Design and Visualization, for user-centric design principles.

cognizant

Cognizant places human-centered and experience-led design at the core of its philosophy by connecting data to plans, systems to narratives, and people to individual

experiences. The company specializes in integrating the experiences of physical and virtual worlds.

GlobalLogic

GlobalLogic has improved its market positioning and has advanced to the Leader position from being a Rising Star last year. The company, along with its customers, co-creates multiple design studios around UX/UI interactions.

HARMAN DTS

HARMAN DTS has progressed from a Product Challenger in 2022 to the Leader quadrant this year. The company conducts in-depth user research and testing for application redesign for its clients. It also infuses green frameworks like environmental, social and governance (ESG) in its offerings.



Integrated Customer/User Engagement

HCLTech

HCLTech's strong UX offering, STRIDE, focuses on user research and innovation. In May 2022, the company acquired Quest Informatics to grow its portfolio of services, client base and capabilities in the Industry 4.0 aftermarket and add business opportunities.



Hexaware's services provide customers with a human-centered experience that enhances organizational resiliency and improves operational efficiency. The company delivers automation through its experience accelerators, self-service channels and organizational insights.



Infosys helps enterprise customers with large data visualizations and predictive analytics and the use of emerging technologies to build more resilient operations. The company has robust IP, frameworks and accelerators, including a human-centric approach.



LTIMindtree has progressed from a Rising Star position in 2022 to the Leader quadrant this year by leveraging the combined strengths of LTI and Mindtree. LTI Mosaic, UI reengineering and digital experience centers are part of its digital engineering ecosystem.

LTTS

LTTS Design Studio works on three pillars: to create measurable impact; work within environmental, privacy and security constraints; and build brand loyalty and monetize it for customers. It offers consultancy, research, UX design and usability testing to future-proof clients' outcomes.



TCS' through its acquisition of W12 Studios (a digital reimagination studio) in the CX space, supports a design-led approach to platform

development. The company offers new services, including UI/UX and accessibility, for improved end-customer experience.



Wipro helps customers to reimagine and rebuild their software products/platforms using modern UI/UX and microservices frameworks and create a unified CX across mobile and the web. The company caters to new-age customer needs with ESG-aware solutions.

Happiest Minds

Happiest Minds provides UI/UX consulting, data visualization and conversational interfaces as part of its customer interface offerings. The company has trained technical resources to use responsive design, micro-front-end architecture and content contextualization.



Persistent Systems offers a unified CX and UI/UX across various platforms. The company significantly improves customer UX by re-engineering and reimagining existing processes. It uses customer analytics, insights, platform integration and accelerators to transform CX.





“The wide range of industries covered by Capgemini’s engineering services enables clients to cross-leverage CX delivery best practices.”

Dr. Tapati Bandhopadhyay

Capgemini

Overview

Capgemini is headquartered in Paris, France and operates in 50 countries. It has more than 359,600 employees. In FY22 the company generated \$22 billion in revenue, with Applications and Technology as its largest segment. Capgemini offers a plethora of services and solutions to clients, allowing them to transform their customer relationships while creating immersive experiences and relevant and emotionally engaging connects. Additionally, Capgemini is changing the scope of integrated CX and UX by investing in immersive technology.

Strengths

Cross-pollinating CX design and delivery across industries:

Capgemini offers its clients unique experience and expertise across the digital technology talent spectrum and multiple domains. The parameters and definitions of CX vary by industry, but certain aspects of digital tech applications and use cases, using conversational AI for customer support, for instance, remain similar in terms of experience design beyond just content delivery. Capgemini helps clients enhance their CX delivery by exchanging best practices in different sectors.

Depth and breadth of support services:

Capgemini integrates global services lines with domain knowledge and delivers customer support services in specific regions and industry contexts.

Content delivery for support:

Capgemini creates self-service and remote service use cases for clients, especially those requiring support services in remote regions or different scenarios, through intelligent algorithm-driven content delivery. Support personnel across different scenarios benefit from ubiquitous access to consistent and curated content.

Caution

Capgemini caters to a breadth of verticals and industries with proven CX use cases. The company should consider bundling its curated CX solutions by industry in the U.S. to help clients accelerate their CX transformation journeys.





Platforms and Applications Services

Who Should Read This Section

The report is relevant for U.S.-based enterprises, evaluating providers offering platforms and applications services to design and deliver platform engineering.

In this quadrant, ISG assesses the providers' current competitive portfolio strengths that offer business and technical design proficiency, build new experiences leveraging digital ecosystems and orchestrate platforms and microservice-based architectures.

Enterprises' priority on speed to market and business agility encourage and push them to embrace the advances in digital technology. The transformation and modernization of monolithic applications to cloud infrastructures require a strong cloud architecture and upskilling of the existing talent ecosystem. Modern stack talent requirements are surging, with enterprises and service providers' significantly investing in the cloud-first vision.

Enterprises prefer providers offering services across the application lifecycle, including application development, modernization and maintenance. Enterprises prefer integrated application service portfolios because they provide a holistic transformation road map.



Chief Digital Officers should read this report to understand the developments in the industry, enabling them to choose and partner with the right provider that can transform their digital landscapes.



Engineering leaders must read this report to comprehend the relative strengths and weaknesses of providers offering platform development services in the digital engineering space.



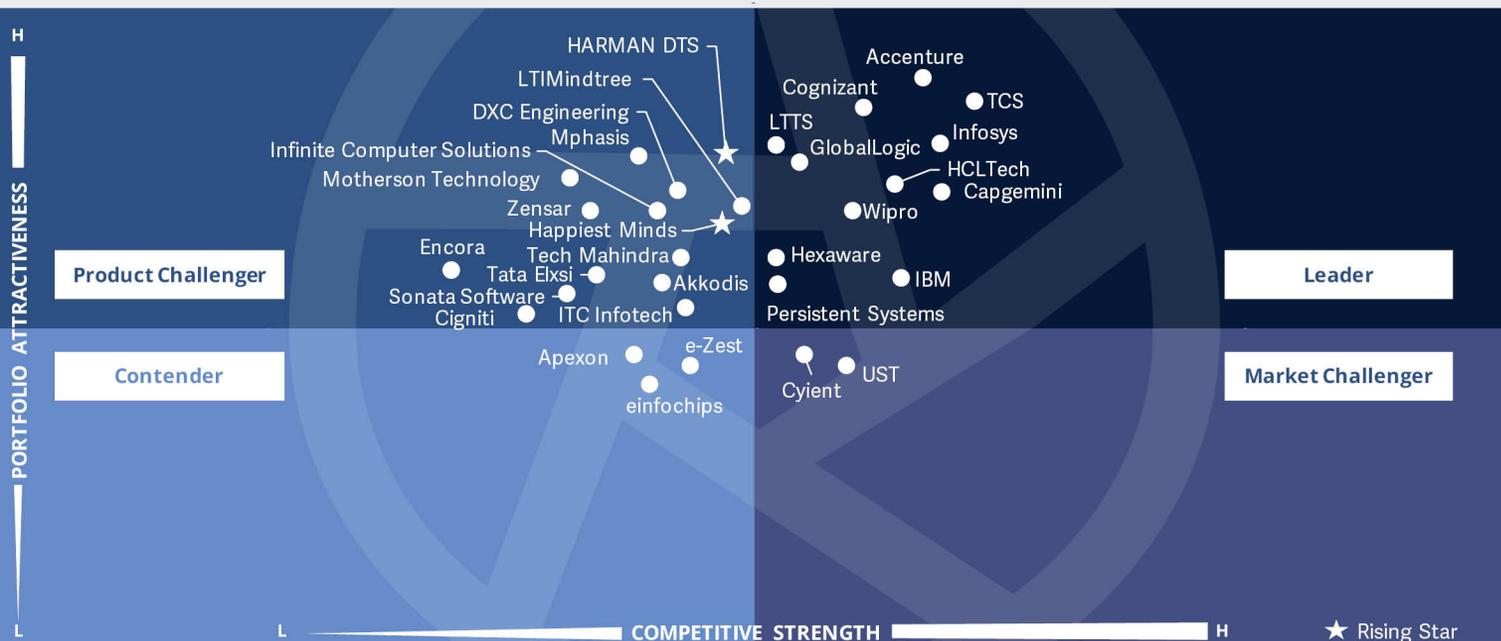
Software development and technology leaders should read this report to understand the relative positioning of providers and how their digital engineering offerings can impact an enterprise's transformation initiatives.



ISG Provider Lens™
 Digital Engineering Services
 Platforms and Applications Services

Source: ISG RESEARCH

U.S. 2023



Platforms and applications are evolving rapidly in the digital engineering landscape **that builds the applications ecosystem.** This quadrant assesses the **delivery capabilities of cloud-native microservices architecture** across a range of digital platforms.

Dr. Tapati Bandhopadhyay



Platforms and Applications Services

Definition

This quadrant covers a service provider's ability to design and deliver digital platform engineering competencies. Key capabilities include proficiencies in business and technical design, building new experiences and leveraging digital ecosystems, orchestration platforms and microservice-based architectures. This analysis also covers containerization, connected intelligence and experience management across products, services and UX in real time.

The new paradigm of platforms represents an abstraction of the standardized, modularized and well-articulated process elements across the value chain, which can be applied and leveraged as virtually independent pieces to address specific functionalities and, hence, define specific outcomes. Platforms serve specific purposes and functions that get delivered as platform services and are easily configurable and extendable.

They also yield benefits like ease of maintenance, fewer changes for variants, lesser setup and changeover time, easy diagnosis and, hence, more reliability during the overall process. Platforms also allow plug-and-play, demonstrate a higher degree of maturity and bring consistency to the value chain.



Eligibility Criteria

- Digital ecosystem orchestration platform capabilities:** Ability to design, build, deliver, support and leverage digital ecosystem orchestration platforms to facilitate commerce and monetize products and services
- Technology platforms engineering capabilities:** Building and operating a common platform as a product for technology teams to reduce the time-to-market and complexity
- Capabilities and proven experience:** Utilize integrated digital technology platforms and digital experience of connected systems, hardware and software
- Core platform strategy and engineering capabilities:** Helping businesses manage organizational change and shift from a product to a platform mentality by architecting and developing an API and ecosystem strategy for a scalable and future-ready platform
- Cloud-native design skills:** Ability and agility to leverage cloud-based digital platform ecosystem offerings and services at speed
- Engineering ADM competency:** ADM ability with a focus on smart, connected product, platform and service design and cloud-native, digital-native design
- Product/service configurability and personalization abilities:** Use of behavioral intelligence and predictive analytics on real-time/streaming data from users and smart connected devices
- Ability to augment and synchronize users' digital experience in real time:** Continuously generate value from connected intelligence within platform ecosystems
- Ability to design, build, test, deliver, run and augment reusable functions/modules in digital platforms (including new, emerging, existing and combined**
- Experience as code capability**



Platforms and Applications Services

Observations

A digital engineering services platform provides capabilities for CI/CD processes, infrastructure automation, security and compliance management, and operational processes such as AIOps. A typical platform workflow migration process consists of the following steps: assessing the application portfolio and identifying technologies and dependencies to determine the migration sequence; deploying cloud microservices and CI/CD platforms; containerizing applications; provisioning cloud caches and messaging; and finally, deploying testing, and migrating apps. Building ADM services for data analytics is the first step in a company's data modernization journey.

- Automating the resolution of high-frequency incidents, coupled with the preemptive elimination of recurring incidents, substantially reduces application support effort. The standardized and sanitized data thus generated provides new insights, enhancing the real value.

- Platform engineering is an emerging trend where a dedicated product team operates and supports the software team by providing reusable tools and self-service capabilities. These capabilities are tailored as per the needs of clients to offer a seamless experience at optimal costs.
- Running microservices in containers with their associated executables and libraries ensures that each microservice operates autonomously with reduced interdependency. Multiple containers can run on a single OS instance, eliminating licensing costs and reducing system resource burdens. Containers automatically generate representational state transfer (REST) APIs for a database, securely establishing data connections between clients' apps and microservices in minutes.

Of the 45 providers assessed for this study, 32 have qualified for this quadrant, with 12 being Leaders and two Rising Stars.



Accenture uses the strength of digital technologies and data to help clients reimagine how they create products. It has been building capabilities through acquisitions; it has acquired XtremeEDA, a silicon design company, to strengthen its cloud computing capabilities.



Capgemini offers ADMnext, which provides futureproof IT applications in a unified approach, using Agile, DevOps, cloud, API, data platforms and security at scale. It also enables digital transformation using its next-gen framework for service excellence and automation.



Cognizant's rich IP, such as the studio model for product development, accelerators and proprietary frameworks, helps it deliver fast,

efficient solutions. It has expertise in large-scale transformation and a resource pool across various technologies, languages and platforms.

GlobalLogic

GlobalLogic has recently closed the acquisition of Hexacta, which is based in LATAM but has most of its clients in the U.S. GlobalLogic helps clients with faster time-to-market and by reducing their TCO on product development, whether on chip, device or cloud.

HCLTech

HCLTech has strong IP, CoEs and balanced digital and traditional engineering, which helps it navigate enterprises' transition toward digital engineering and mitigate their challenges more responsively. It offers low code/no code, data pipelines, SRE/AIOps, CloudSMART and more.



Platforms and Applications Services



Hexaware's RapidX and ATOP offer agility to firms to build enterprise-grade applications, API and microservices at a speed of a much smaller firm. Backed by its domain and technology knowledge, its ADMS ensures faster time-to-market, better predictability and lower TCO.



IBM continues to build its capabilities; it recently acquired Dialexa, a leading digital engineering services company in the U.S. With a global presence, flexible commercial models and cross-functional expertise, IBM offers an end-to-end transformation journey.



Infosys supports firms in platformization with the end-to-end development of software products. It has IP, accelerators and resources to support use cases across verticals. Infosys' Smart Network Assurance and Autonomous System platforms support firms in different industries, including manufacturing.

LTTS

LTTS has strong IP and research/innovation labs worldwide. It also engages with clients as a sustainability implementation partner. It has a range of in-house accelerators, including Cogmation, Nouvis, SafeX and Virtual ECU, which can enable cost savings and efficiency.



Persistent Systems has acquired MediaAgility and Data Glove to strengthen its capability to deliver better cloud-native application development and modernization, analytics and AI, cloud engineering and managed services. The company has a presence across verticals and growing domain experience, with consistent organic and inorganic growth.



TCS has labs focusing on cloud engineering and cybersecurity. It uses verticalized solutions with products/platforms in the DevOps, Agile,

cognitive AI and blockchain areas. It has well-defined engineering processes, engagement models, governance and reference architecture.



Wipro's digital engineering services belong to the iDEAS business line. The company helps customers transform by rebuilding legacy software to make it hybrid/cloud-ready (designed for Internet scale). It provides a highly available, scalable and resilient foundation and deployable solutions.

Happiest Minds

Happiest Minds, a new provider, works as a comprehensive engineering support system for customers, developing in-house applications and helping them streamline operations afterward. Its solutions improve transparency and management of operations for customers.

HARMAN DTS

HARMAN DTS' digital transformation services have positioned it as a Rising Star this year (Product Challenger in 2022). The company supports customers with API, microservices, DevSecOps and more. It provides cloud service deployment, driving business agility for customers.





“Capgemini’s integrated intelligent automation platform solutions help clients pivot their monolithic businesses into agile platform-based models.”

Dr. Tapati Bandhopadhyay

Capgemini

Overview

Capgemini is headquartered in Paris, France and operates in 50 countries. It has more than 359,600 employees. In FY22 the company generated \$22 billion in revenue, with Applications and Technology as its largest segment. Capgemini’s ADMnext, a full stack of application development and maintenance services, is supported by various organizational tools. These services are cost-effective and deliver enriched CX without hampering operational efficiency.

Strengths

Intelligent Automation Platform: Clients can undergo rapid business transformation by leveraging the integrated digital technologies and solutions available on Capgemini’s Intelligent Automation Platform (CIAP). The platformized approach enhances clients’ access to digital technology applications and use cases relevant to their industries and delivers predictable outcomes and proven results.

Fast deployments and value realization: The speed of deployment and value realization is enhanced significantly because the solutions in the platform are curated and bundled across data, algorithms, use cases and knowledge assets. This significantly reduces the application deployment time and directly impacts the go-to-market timelines.

Composable architecture enablement:

Given the flexible nature of Capgemini’s platform engineering assets and capabilities, clients can build and operationalize agile composable business architectures on the platform. Best practices from DevOps, containerization, APIfication and data, cloud, ML and technology stacks are combined and available on these platforms. The composable architectures enable clients to sync their business and operating models to the fast-changing market realities in the U.S. and other economic regions.

Caution

Capgemini could showcase its capabilities through more value-demonstrated communications. Such efforts will likely attract clients that want to pivot from their traditional, digitally hybrid, monolithic business operating models into fully flexible digital platforms.





Intelligent Operations

Who Should Read This Section

The report is relevant for U.S.-based enterprises, evaluating providers offering intelligent operations across industries with legacy factories and production plants.

In this quadrant, ISG assesses the competitive portfolio strengths of providers that address enterprise requirements for smart and new digital technologies and help them set up intelligent greenfield and brownfield plants and operations.

With the evolution of Industry 4.0, enterprises are embracing technological transformation by implementing various solutions that can make the machines in production plants intelligent. Providers must build a strong technology portfolio and have a skilled talent base to implement and support these initiatives. They should also build strong use cases and Proof of Concepts (PoCs) that build credibility and openness.

Enterprises expect providers to help reduce their costs quickly with less focus on creating a strong road map that resonates with the business outcomes and customer benefits. Sometimes, business units work in silos with various business-level goals that do not resonate with the overall organizational objectives. Providers working with enterprises should be able to integrate and combine the efforts of different business units and bring a shift in attitude toward achieving a greater business goal.

Providers must have strong portfolios across technologies such as analytics, MR/VR, robotics, digital twins and solutions for cybersecurity, privacy and transparency.



Engineering leaders should read this report to better understand the relative strengths and weaknesses of providers offering intelligent operation portfolios.

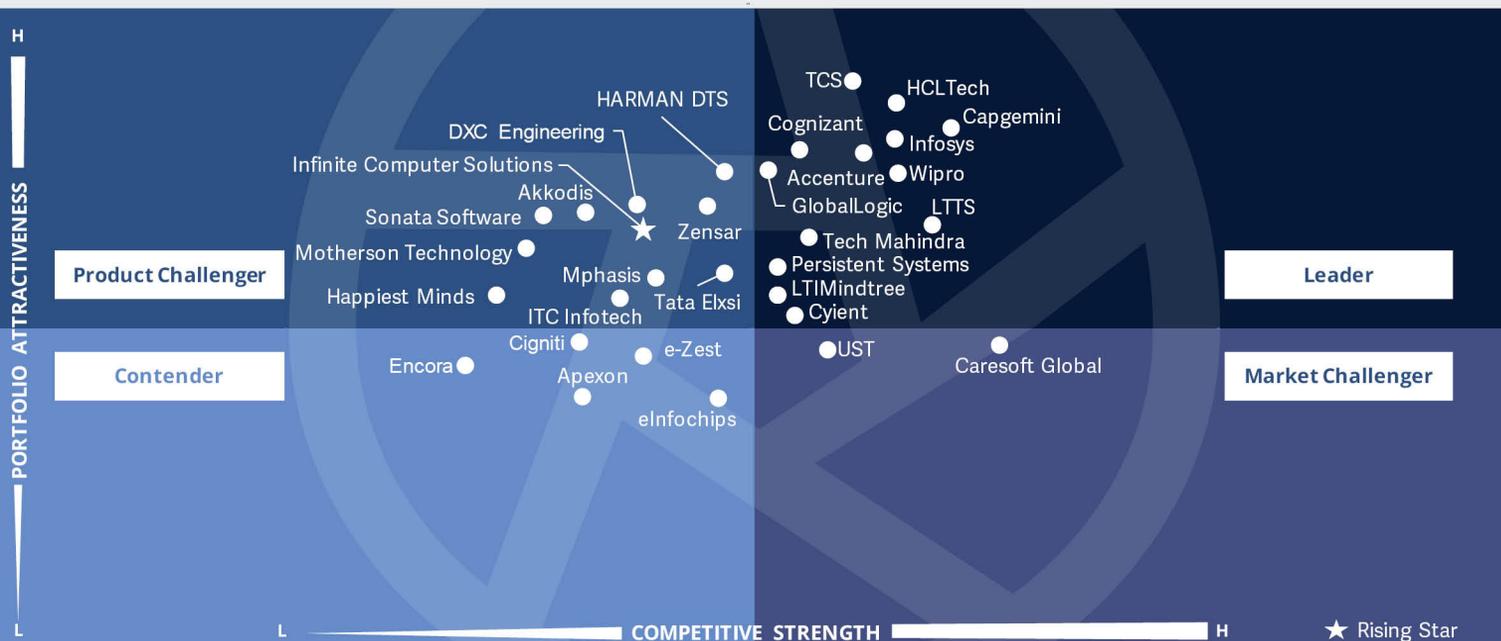


Manufacturing leaders should read this report to better understand the current landscape of digital engineering service providers in the U.S.



Software development and technology leaders should read this report to understand the relative positioning of providers and how their digital engineering offerings can impact an enterprise's transformation initiatives.





Intelligent operations are processes and practices **that use data, analytics and automation** to optimize the **performance and efficiency of digital engineering projects**. This quadrant assesses the providers' **competency to deliver process efficiency and continuous improvement**.

Dr. Tapati Bandhopadhyay



Intelligent Operations

Definition

This quadrant assesses service providers that offer intelligent operations to clients across industries with legacy factories and production plants. The providers offer smart and new digital technologies and methods and help set up intelligent greenfield and brownfield plants and operations.

Intelligent operations encompass paradigms such as Industry 4.0 – 5.0, smart industries and IIoT that impact the industry. These trends aim at making the operations more connected, autonomous and capable of self-decision-making and auto-correction. Various elements of operations, such as machines communicating with each other, fetching the status of various operations and deciding and correcting commands on both upstream and downstream ends, help reduce manual dependencies and interventions and increase operational efficiency.

Eligibility Criteria

Proven experience in design, implementation and operations:

Technologies, methods, structures and processes used in the context of Industry 4.0, smart factories, smart production/operations, supply chain, distributions and service operations

1. **Breadth and depth of coverage** in connected operations for different types of industries in the target regions, with proven examples.
2. **Experience in OT solutions**, specifically across data, security and people aspects.
3. **Experience with applying digital technologies:** Including various digital threads such as real-time AI and machine learning, remote, field and hazardous operations

management, real-time data engineering, edge computing, 5G, industrial cybersecurity and cloud engineering.

4. **Asset performance, maintenance and life cycle management:** Covering asset performance monitoring, maintenance schedules, lifetime value optimization and predictive maintenance.
5. **ESG compliance resources:** Support for environmentally sustainable smart operations.
6. **Demonstrated experience with new business/operating models:** New ways of operating and optimizing highly flexible and intelligent production and assembly lines/flow operations, supporting new business models.



Intelligent Operations

Observations

Using SynOps, intelligent operations can build and future-proof operating models to drive sustainable growth. Emerging technologies, such as cloud computing, AI, IoT, edge computing and 5G, have facilitated the convergence of the physical and virtual worlds across all business operations, including R&D, engineering, manufacturing and supply chains.

- A digital thread provides a logical path for tracking information throughout a system's lifecycle. Engineering teams can track the digital thread to better assess the impact of design changes and manage specifications, implementation and verification. This capability also helps meet regulatory and compliance requirements and enables teams to respond quickly to product recalls and quality issues. A digital thread maps engineering data to related processes and people in digital engineering services but needs a bottom-up approach.

- IoT creates new data streams that aid decision-making and connects assets with other sources of live intelligence, facilitating better asset management. The lack of data and silos prevent some companies from assessing their asset performance. This gap drives replacement and repair costs, causing delays and customer dissatisfaction. A digital twin helps broadly address these issues.
- Feature engineering helps analyze unstructured data from multiple sources, from voice to sensor and video data. ML algorithms help assess and predict the right patterns. Intelligent automation brings the intelligence back to the action items using AI. Together, these three steps help integrate workflows and realize efficiencies at scale.

From the 45 companies assessed for this study, 31 have qualified for this quadrant, with 13 being Leaders and one Rising Star.

accenture

Accenture has acquired many companies with IT-OT convergence capabilities. The acquisition of Trancom ITS has helped the company expand its Industry X services to the manufacturing and logistics industry.

Capgemini

Capgemini's engineering experts use an Intelligent Industry framework to apply innovation and digitalize enterprise operations. The company co-creates and works with customers across software and hardware areas to run operations intelligently.

cognizant

Cognizant's acquisitions, such as Mobica, augment its offerings and capability. The company leverages technologies such as digital twins and AI/ML to monitor and preempt issues at customer sites. Cognizant has a strong client base and a robust partner ecosystem.

GlobalLogic

GlobalLogic has progressed and moved to the Leader position this year from the Product Challenger position in the previous year. Hitachi's expertise in IT and operational technologies and GlobalLogic's strength will strengthen Hitachi's Lumada services and solutions.

HCLTech

HCLTech has a relatively improved positioning mainly due to its focus on emerging technologies, such as AI/ML, IoT, blockchain and additive manufacturing, to solve complex enterprise challenges. IoTWorks has a solid client base and focuses on sustainability in business operations.



Intelligent Operations



Infosys supports its clients' digital transformation with various services in discrete and process industries with its market-leading Industry 4.0 Maturity Index or XR platform for digital twin and other frameworks.



With the combined strength of LTI and Mindtree, **LTIMindtree** has moved to the Leader position this year from a Rising Star in 2022. Insight NxT, Asset NxT, Worker NxT and Material NxT, a connected ecosystem, are a few of its accelerators and platforms.

LTTS

As a digital integrator with rich experience in manufacturing operations, **LTTS** helps its customers by providing KPI-driven services. The company offers AR/VR-driven innovative field solutions and operates over 30 in-house tools and accelerators.



Tech Mahindra's combination of advisory, processes, change management and solutions aim at making client organizations more intelligent and nimbler. The company recently acquired Allyis India and Com Tec Co IT to strengthen its digital engineering services.



TCS offers industry-specific platforms to mitigate customer challenges in their digital transformation. Has an extensive set of IPs and accelerators to improve efficiency and deliver faster business outcomes in customers' digital journeys.



Wipro's Engineering Edge provides proprietary, ready-to-use frameworks and accelerators that enterprise customers can deploy to enable faster, sustainable, more efficient connectivity and generate ready value.



Infinite Computer Solutions's core service offerings include business transformation, application development management services, quality engineering and assurance.





“Capgemini has deep knowledge and superior talent in intelligent operations that can bring about strategic impact.”

Dr. Tapati Bandhopadhyay

Capgemini

Overview

Capgemini is headquartered in Paris, France and operates in 50 countries. It has more than 359,600 employees. In FY22 the company generated \$22 billion in revenue, with Applications and Technology as its largest segment. Capgemini’s smart plant solutions are sustainable and have a positive social impact. These solutions embrace digitalization, smart modular technology, data and analytics to ensure long-term financial benefits to clients in various industries.

Strengths

Making operational technologies smarter:

Capgemini leverages its deep expertise in integrating operational technologies to transform legacy tech infrastructure elements into intelligent, connected, knowledge-powered digitalized operations.

Use of digital technologies in production operations:

Capgemini increases the efficiency of legacy client product operations using deep expertise in implementing Industry 4.0 technology stacks, including the manufacturing execution systems (MES), product lifecycle management (PLM), SCADA systems, and digital technologies in Industrial IoT, 3D printing technologies, smart lights-out factory designs and maintenance.

Lifecycle management for operation assets:

Capgemini enables clients to make their operational assets smarter through effective AI use cases, such as computer vision and conversational AI on the shop floor. These initiatives include implementing use cases built on the data collected from legacy machinery and production systems. By using AI and ML in production, the company can extend the value and utility lifecycles of assets and perform smart, proactive maintenance and upgrades for machines and systems.

Caution

Capgemini must highlight its strong differentiators in the U.S. market, especially its capabilities in cost-efficient and compliant industrial and business operations, which are critical in current market conditions.





Appendix

The ISG Provider Lens 2023 – Digital Engineering Services – U.S. study analyzes the relevant software vendors/service providers in the U.S., based on a multi-phased research and analysis process, and positions these providers based on the ISG Research methodology.

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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 March 2023, 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



Author & Editor Biographies

Lead Analyst



Dr. Tapati Bandhopadhyay
Lead Analyst

Dr. Tapati Bandhopadhyay brings in a vast and well-rounded experience of approximately 30 years from global corporations with the DNA of leveraging IT for business transformation. For more than seven years, he has been sharing his entrepreneurial learnings for small and midsize businesses to better business effectiveness and efficiencies. He has a unique blend of experience covering contributions in consultancy and advisory, innovation and transformation, R&D center of an Indian automaker, customer management and support, exposure to the end-to-end product development lifecycle from renowned organizations from inception to stabilization, and finally inward and

outward looking experience in a services organization. He has been instrumental in driving a global domain practice in the space of manufacturing excellence by identifying it as a white space in comparison with the competition. He subsequently created the whole go-to-market strategy with the thought process of offerings, solutions and success stories on the global landscape, with close interaction with research and advisory firms. He specializes in business innovation and technology changes. He possesses an ability to build a larger picture by connecting dots, to drive changes from concept to realization, to work on inner conviction and to question the status-quo, aiming to optimize business operations.

Research Analyst



Srinivasan PN
Research Specialist

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 partner 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](#).

ISG Research™

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