ISG Provider Lens™

Digital Engineering Services

A research report comparing provider strengths, challenges and competitive differentiators

QUADRANT REPORT | JUNE 2023 | EUROPE

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Executive Summary

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Digital engineering drives interventions across industries to increase efficiencies and effectiveness

The digital world offers enormous opportunities and challenges to the current generation to cope with changes. The adoption of evolving digital technologies offers better ease of life, access to information, fact-based decision making and switching between real and digital spaces. Digital technology is revolutionizing the world of work, value chains, innovation and market and business structures. Modern-day digital customers expect faster, more personalized experiences when reaching out to a business' contact center. Digital adoption created a great convergence among countries in Europe over the last year – the trend was very positive during the post-pandemic period and has stabilized while still showing upward trends.

The technology-savvy end-customer has pushed the need for accelerated digital technologies adoption across industries.

CX is taking the central position for any product or service being built, and each element is bringing a touch of digital perspective into play. The whole business ecosystem is becoming digital and thus requires providers to be capable of addressing the changing customer needs through the latest technology and tools. Enterprises are investing in digital technologies, such as artificial intelligence, cloud computing and big data, to increase efficiency, reduce costs and improve CX. With data, solutions and tools, the products companies make and how they make them can be reimagined digitally. Digital firms are inherently more scalable, have greater efficiency and productivity, are more innovative, grow faster and create more digital opportunities.

Business context and technology changes are the key factors driving engineering services. Digital is the mantra for the products and services being envisaged for the digitally capable end customer. Business imperatives dictate metrics such as faster product life cycles and rapid releases of new products and variants. They promote the virtual prototyping adoption to reduce the risks involved in design

Digital engineering is **driving convergence** of business and technology for the **digitally smart end users**.

cycles and to optimize iterations, time and cost during the engineering stages.

The following perspectives are affecting the European market in a significant way.

- **Greater need for digital transformation:** The COVID-19 pandemic has accelerated digital technologies adoption across industries, and this trend is continuing in Europe. AI, cloud computing and big data are among the key digital technologies that enterprises are investing in to improve CX, increase operational efficiencies and reduce costs across the value chain.

- **Focus on sustainability:** Environmental and social sustainability are becoming increasingly important for businesses across Europe. As part of their ESG focus, enterprises are adopting sustainable practices, reducing their carbon footprints and implementing circular economy principles to achieve sustainable growth.

- **Mandatory growth of e-commerce:** E-commerce has significantly evolved in the recent past. With the pandemic accelerating the online shopping trend, many consumers are likely to prefer e-retail in the times ahead. Retailers are investing in digital channels to meet changing consumer behavior.

- **Increasing digital interventions in healthtech:** Considering its high importance, enterprises are heavily investing in digital health technologies in the European market. In healthcare, the main focus is on technologies around telemedicine and remote patient monitoring to improve access to care and patient outcomes.

- **Automation and robotics:** Enterprises are acknowledging the significance of automation and robotics and hence making higher investments in the technologies to increase productivity, reduce costs and improve operational efficiency. Robotics is also finding applications in healthcare, logistics and manufacturing to automate repetitive and dangerous tasks.

- **Impact of the ecosystem on business and digital scenarios:** The UK recession and war in Ukraine have affected the European ecosystem in several ways. The stress on supply chains, uncertainty on foreign exchange rates, reduction in overall demand, the readiness of customers and industries to make long-term/short-term investments have all caused the scope of digital interventions to be based on the assessment of the risks associated and the resources available. Interestingly, consumers currently don't expect the war in Ukraine to have much of an effect on their digital usage. But some businesses might be required to move their operations across to other locations.

Over the years, the digital element has grown significantly to bring digital twins into existence which connects the physical and digital worlds closely. Industry 4.0 and other digital trends, 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.

We also see the following industry segment highlights in the DES space in Europe.

Automotive Industry

Growth in the European automotive industry has been slow in recent years due to factors such as the economic slowdown changing consumer preferences, and increased competition. However, some areas of the industry have seen growth, such as electric and autonomous vehicles and automotive software. Automotive products are becoming intelligent and self-contained, which is increasing the challenges on the systems and solutions used to take them from inception to reality.

Aerospace Industry

The aerospace industry in Europe has been growing steadily in recent years due to factors such as increasing demand for air travel, rising defense budgets and technological advancements. The industry, which was slowed due to the COVID-19 pandemic, is expected to recover in the long term.

Healthcare Industry

Europe's healthcare industry has been expanding steadily, resulting from an aging population, rising healthcare costs and technological advancements. The pandemic increased demand for some healthcare services and accelerated the adoption of digital health technologies.

The developments highlighted above represent only a sample of what is happening in industry verticals. Digital has not spared any of the following sectors and has its own customer impact, leading to customer-centric powerful use cases for each of the following:

Airlines, amusement and recreation, arts and culture, banking, business services, chemical industry, construction, consumer services, consumer staples, e-commerce, education, energy, engineering, entertainment, environment, fashion, forestry, government, healthcare, heavy industry, hotels, infrastructure, insurance, law, life sciences, logistics, manufacturing, media, mining, non-profits, professional services, publishing, real estate, restaurants, retail, science and technology, space, telecom, tourism, transportation, utilities, wholesale. Opportunities in these industries for digital interventions have to be clearly identified in powerful customer scenarios and use cases for the digital providers to address them to cross-multiply benefits across these industries.

The market has moved in a synchronized manner toward digital engineering

transformation services to provide an overarching strategy for digital products, services and solutions. It is delivering new capabilities for real-time and concurrent digital product design, along with data-driven product lifecycle management (PLM), flexible, intelligent manufacturing operations and digital CX delivery services.

With the focus we have on the four quadrants in the current study on Digital Engineering Services, the following trends are evident across the providers to disrupt the market in the Digital Engineering Space.

- **Engineering R&D (ER&D) becoming a strength:** Customers are looking for stronger players with abilities to understand, relate to, completely own and execute larger digital transformations with a deeper understanding of ER&D as a specialized discipline. Digital engineering service providers need an extraordinarily strong background in engineering research and development. The deep experience and knowledge from the large transformational engagements in ER&D with multiple customers serves as a differentiator from the competition.

- **Focus on software to be central for digital offerings:** Providers need to become more intelligent, connected-capable, reliable and hence predictable to their customers by leveraging software tools across the value chain so they and their customers can deliver efficiencies, comfort, and advanced features to the end customer.

- **CX is a key driver for success in the long term:** The conventional start of any product development is a comprehensive analysis of the market requirement and applying the learnings from the earlier products in the market. This approach is conventionally known as the voice of the customer (VoC), and now powerful end-to-end use cases cover a plethora of digital information sources to drive feedback to the design upstream to make the process self-learning and self-driving. CX, in the form of customer inputs, expectations and comforts, takes the front seat to the drive product development process.

- **Global preparedness with the right competencies:** The advent of digital has drastically impacted the expectations of various roles in enterprises. As there is a ready market for customers across globe, the digital engineering industry is spreading across geographies and its growth is indicated by the number of locations of operations and the sizes of global teams collaborating digitally. The industry always needs very specific competencies for building international digital operations. The industry has started expecting to get the employment-ready students from academia.

- **Supply chains becoming visible and intelligent:** The digital impact extends further than the enterprise to the extended supply chain in both upstream and downstream directions. The digital technologies enable supply chain visibility and performance to make supply chains more intelligent, strongly connected and predictable.

Technologies such as mobility, big data, AI, ML, IIoT and predictive analytics can impact the entire value chain to make it increasingly visible, trackable, reliable, consistent, controllable and, hence, predictable. This has resulted in the digitization of the entire value chain – right from product inception to manufacturing and across the industry spectrum. This digitalization includes foundational engineering services, such as product innovation, ideation, strategy and design, R&D, operations, PLM and aftermarket services. Track-and-trace ability has gained importance for 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. All four quadrants analyzed in this report are digitally enabled to become more intelligent and capable both in the product and process perspectives.

From the four focused subject areas, the following observations are prominently evolving across the providers:

- **Design & Development**
  - Strong use cases of digital twins and threads across the value chain
  - Streamlined working of the CAD/CAM/CAE/CAM digital tools with integrations with ERP and CRM is evident
- **Intelligent Operations**
  - Supporting clients from the manufacturing and other verticals for the digital interventions for their operations. The digital manufacturing transformation use cases could be leveraged across the industries with appropriate contextualization.
  - In addition to the conventional global metrics for the operations, issues such as sustainability and carbon footprint should also be considered.
- **Customer Experience**
  - Setting up design studios and keeping CX at the center of the product design and development value chain
  - Continuous feedback for the product experience across the value chain and improvement loops – to avoid surprises at the product release
- **Platforms & Applications**
  - Supporting the customers' products and variants, and platforms for the same
  - Extending digital support to both digital and physical products to the customer's customer

As an indicative comparison, the EU falls short of the U.S. in terms of technology adoption. On average, European firms are less often fully digital, and digitally transformed companies are particularly lacking in the manufacturing, construction, communication and other industries. Furthermore, U.S. firms invest more in business process improvements compared to their EU counterparts.

Based on the market availability and hence the services rendered, a typical digital engineering provider generates 15-30 percent of its revenue from the European market, which most of the providers are indicating could be increased further. Some of the providers are seen to be cross-leveraging their global customers from the U.S. to be geographically present in the EU to extend their presence and increase the market share, while the others have a dedicated EU focus strategy for growth.

Following are some of the concrete and direct recommendations for service providers to demonstrate and improve their scores on ISG's Portfolio Attractiveness and Competitive Strength evaluations in each of the quadrants studied.

- **Design & Development (Products, Services and Experiences)**
  - Impact on the design and development of the end customer's product is the key to success
  - Build a stronger foothold in the ER&D space
  - Get entrenched in the customer's product development by providing value-add by driving innovation

- **Integrated Customer/User Engagement**
  - Aim at providing CX at the core and extend it to the end-customer across the value chain
  - Convergence of the real and virtual worlds is critical
- **Platforms & Applications Services**
  - Build a comprehensive story for how the digital platforms are supporting the providers' product processes and hence helping the end customers and their products, ensuring better business outcomes
  - Make the definition of the platform and application layer more abstract to cover products, processes and resources for the customers and make it industry-agnostic so it can address a larger market with maximum reuse
- **Intelligent Operations**
  - Build support for end-to-end customer operations and aim at growing across the walls to the extended enterprise
  - Support for shop floor to top floor, virtual gemba, AR/VR in real-life use cases is the key
  - Adopt concepts such as plant-in-a-box and plant-in-a-mobile
  - The advent of Industry 5.0 must be converted into an overarching storyline as a matured, long-term, and sustainable approach

This study was designed to give a perspective of four key elements in the customers' value chain and assess how the market is bringing digital interventions into this space. About a decade back, digital was a lever for growth for the industry. It has now become a mandatory element for existence and a differentiating factor to drive the market. The early move to cope with the trends like dark factories, neural plant floors, and digital twins of industry workers are going to challenge the market and create opportunities for thought leadership.

Taking an approach that will drive positive impact and hence alignment to the customer's business imperatives and KPIs, eventually to be delivered through the digital transformation, is the way for the provider to move up the value chain, gain mindshare with the customer and make greater impact on the ecosystem. Stronger consideration to digital reimagination of the customer's value chain will result in providers winning mindshare and confidence from customers. Technologies like 3D printing, AI, ML, robotics and self-learning business processes will keep disrupting. They will bring more automation and intelligence to build the industry, which is will be increasingly digital in the years to come. A stronger recommendation for gaining more business and attention from customer management is to embed domain experts in the customer's business and enable the digital drivers by building the business transformation roadmap with customers. The aim is to eventually drive digital IT initiatives to achieve the desired business outcomes.

Providers are mostly technology-driven companies, so it's obvious they bring and promote a tech-centric view of solutions and their benefits. Now it is critical to bring the customer's business-centric view to outline compelling and strong use cases to ensure the business outcome through the digital technology enablers that the providers are bringing to the fore. Providers should work with this focus to keep capturing these views from customers and using success stories to articulate the benefits across industries.

Next year's Digital Engineering Services study will be based on the next year's digital drivers for business and technology dimensions. It would be an interesting perspective to evaluate the value added by providers from the customers' point-of-view.

With the expectation of demonstrating stronger business use cases and scenarios, ISG will make the next year's study more focused on bringing the next-generation elements into the framework.

> Digital engineering empowers, informs and equips the end user with more powerful, innovative and efficient use cases from the digital world around us.

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	Contender	Not In	Not In	Not In
Akkodis	Contender	Contender	Contender	Contender
Bertrandt	Market Challenger	Not In	Not In	Not In
Bosch SDS	Product Challenger	Not In	Not In	Product Challenger
Capgemini	Leader	Leader	Leader	Leader
Cigniti	Contender	Contender	Contender	Contender
Cognizant	Leader	Leader	Leader	Leader
Cyient	Market Challenger	Contender	Product 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
EDAG	Market Challenger	Not In	Not In	Not In
eInfochips	Contender	Not In	Contender	Contender
e-Zest	Contender	Contender	Contender	Contender
GlobalLogic	Leader	Product Challenger	Rising Star ★	Not In
Happiest Minds	Product Challenger	Product Challenger	Product Challenger	Not In
HARMAN DTS	Leader	Leader	Product Challenger	Product Challenger
HCLTech	Leader	Leader	Leader	Leader
Hexaware	Product Challenger	Product Challenger	Market Challenger	Not In
IBM	Product Challenger	Market Challenger	Product Challenger	Contender
Infinite Computer Solutions	Rising Star ★	Product Challenger	Rising Star ★	Product Challenger

Provider Positioning

Provider Positioning

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	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	Product Challenger	Not In	Leader	Leader
LTTS	Leader	Product Challenger	Product Challenger	Leader
Motherson Technology	Rising Star ★	Rising Star ★	Product Challenger	Rising Star ★
Mphasis	Product Challenger	Product Challenger	Product Challenger	Not In
Persistent Systems	Product Challenger	Rising Star ★	Market Challenger	Market Challenger
Sonata Software	Contender	Contender	Contender	Contender
Tata Elxsi	Product Challenger	Contender	Not In	Contender
TCS	Leader	Leader	Leader	Leader

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Provider Positioning

	Design and Development (Product, Services, Experience)	Integrated Customer/ User Engagement	Platforms and Applications Services	Intelligent Operations
Tech Mahindra	Product Challenger	Leader	Product Challenger	Product Challenger
UST	Product Challenger	Contender	Contender	Product Challenger
Wipro	Leader	Leader	Leader	Leader
Zensar	Product Challenger	Product Challenger	Product Challenger	Not In

Key focus areas for **Digital Engineering Services 2023**
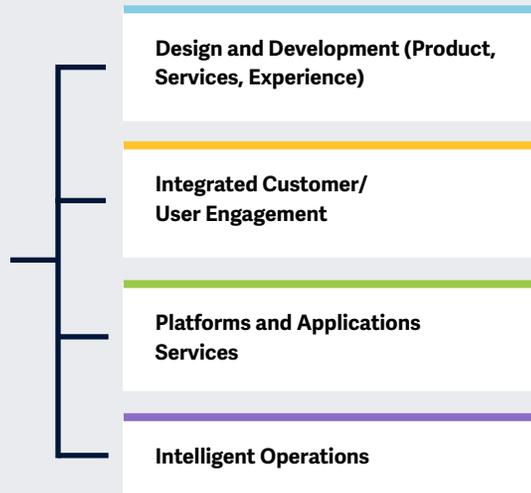
Simplified Illustration Source: ISG 2023

- Design and Development (Product, Services, Experience)
- Integrated Customer/ User Engagement
- Platforms and Applications Services
- Intelligent Operations

Definition

Business context and technology changes are the key drivers for engineering services. Business imperatives drive metrics such as faster product life cycle 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 digitization 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 life cycle 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 hence 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

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 (exceptionsare 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.

★ **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.

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.

Design and Development (Product, Services, Experience)

Design & Development (Product, Services and Experiences)

Who Should Read This Section

The report is relevant for Europe-based enterprises to evaluate 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 their service portfolios, which include ideation and strategy to design, prototyping and quality testing.

Enterprises are modernizing and accelerating their design portfolios and application development with minimal disruption to meet the growing business needs. The use of emerging technologies such as containerization, microservices, cloud-native development and DevSecOps is gaining importance among enterprises and providers.

Enterprises today aspire to build and deliver an intuitive and frictionless digital experience, facilitating their seamless journeys. To achieve this, enterprises mindfully select the right platforms and technologies with a clear strategy and vision to address evolving customer needs and market conditions. Enterprises seek to partner with providers that demonstrate robust digital strategies and design capabilities, leveraging the latest technologies and cutting-edge frameworks to deliver enhanced customer value.

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

Engineering leaders should read this report to understand 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)
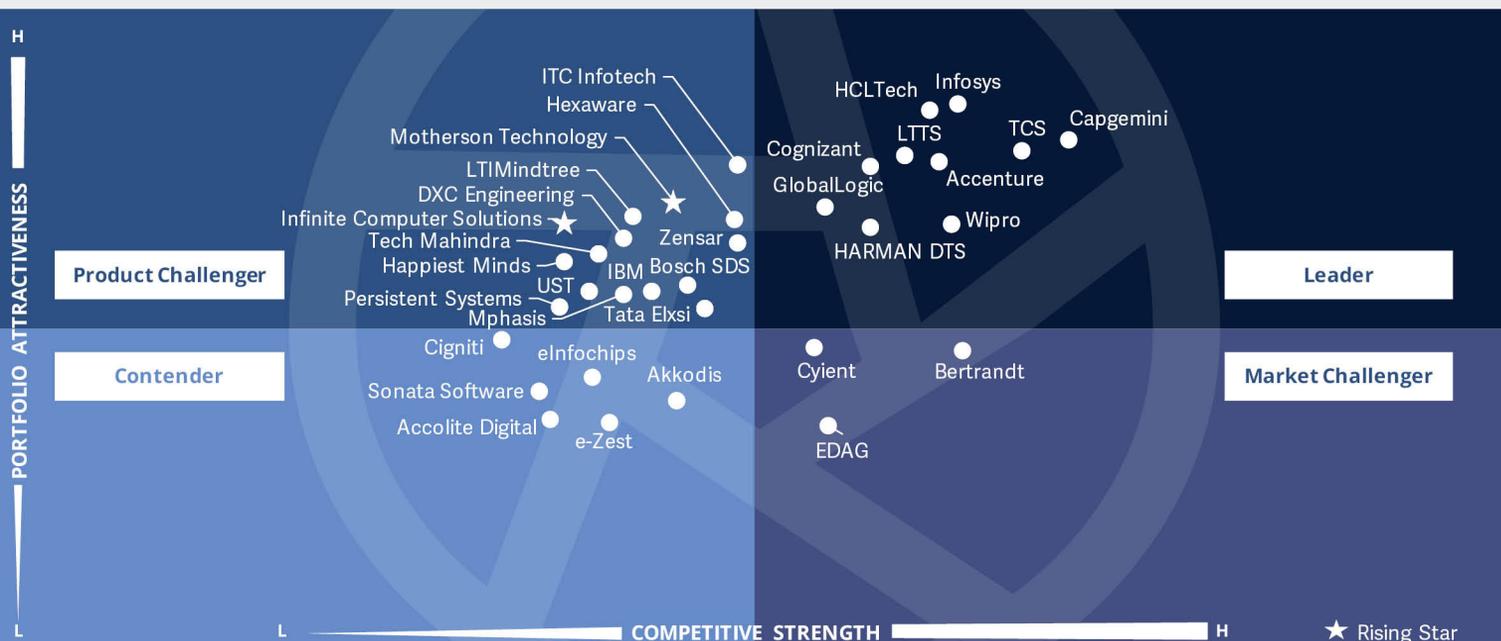
Source: ISG RESEARCH

Europe 2023

This quadrant assesses a provider's **ability to deliver** integrated hardware/software and new **data-driven product development and feature augmentation services**. These cover the digital interventions in the product ideation to productionization process.

Shirish Kulkarni

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

European providers have expertise in offering end-to-end solutions such as product ideation, inception, design, development and prototyping. The providers have demonstrated capabilities in delivering these products and solutions across industries.

The providers in this region are assessed on the basis of their capabilities to map the clients' new product development and new product introduction (NPD/NPI) processes. They are also evaluated on the parameters of how they offer digital interventions to enable clients achieve cost-effectiveness, reduce cycle time, improve access to stakeholders' concurrent model and build role-based dependencies.

The providers help clients improve their internal processes through digital interventions such as digital twin, digital thread, AR and VR, and focus on CX by collating the use cases via digital sources.

This quadrant clearly articulates providers' abilities to improve clients' business outcomes and presents an end-to-end perspective of the value chain integration with other platforms, including operations and CX. Certain providers demonstrated their unique use cases of quality (360° quality/total quality) and end-to-end track-and-trace to place them ahead of the competition and create an entry barrier for others.

From the 48 companies assessed for this study, 34 have qualified for this quadrant with 10 being Leaders and two Rising Star.

accenture

Accenture delivers IoT-connected, software-enabled product design and development services, offering opportunities with metrics such as recurring revenue, customer loyalty and higher margins.

Capgemini

Capgemini delivers services with digital threads and digital twins as building blocks for digital transformation being deployed in every type of asset-intensive industry to address business challenges in efficiency, quality, innovation and profitability across the value stream.

cognizant

Cognizant offers end-to-end product design and development services and help its clients realize the benefits of fusing the physical and virtual worlds.

GlobalLogic

GlobalLogic is focused on cloud-native design, AI, ML, IoT and AIoT to strengthen its position in the product development space. The company is also developing its capabilities around edge, 5G platforms, AR, VR and mixed reality (MR).

HARMAN DTS

HARMAN DTS has a dynamic portfolio of innovative automotive solutions. As an automotive technology integration expert, the company offers an array of services ranging from hardware components to highly integrated digital cockpit platforms, advanced driver assistance systems (ADAS), cybersecurity, telematics, over-the-air OTA updates, car audio and cloud services.

HCLTech

HCLTech is investing in a global network of multidisciplinary design studios for ideation and innovation around market research, user research, strategic research and innovation, and design for experience in customer engagements.

Design & Development (Product, Services and Experiences)

Infosys

Infosys delivers end-to-end product development services. The company helps its clients to first uncover user needs and then designs and develops create concept solutions around these needs.

LTTS

LTTS experts specialize in assisting clients throughout their product development journey involving product design and prototyping, VLSI, software, hardware and security engineering

TCS

TCS provides end-to-end support around the product development life cycle, from conceptualization to prototyping to manufacturing. The company has specialized design teams from multiple disciplines, including software, embedded sub-systems, hardware, mechanical and VLSI.

wipro

Wipro's joint ownership and risk-reward model for product engineering amplifies revenue for its clients. Its domain expertise enables the company to provide clients with competent product design and engineering services.

infinite

Infinite Computer Solutions' (Rising Star) rich product engineering expertise has helped OEMs to achieve major transformation on cloud-based voice over LTE, evolved packet core, vCPE and ETSI-based multivendor cloud bots.

motherson

Motherson Technology Services Ltd. (MTSL) (Rising Star) provides customized solutions by partnering with its clients' R&D and engineering teams to address the diverse and complex engineering and design needs across multiple domains in automotive, medical devices, aerospace and industrial manufacturing sectors.

Capgemini

"Capgemini is an engineering-led design organization that conducts technical discovery by identifying pain points and clients' business and technical requirements."

Shirish Kulkarni

Overview

Capgemini is headquartered in Paris, France and operates in 50 countries. It has more than 359,600 employees worldwide. In FY22 the company generated €22 billion in revenue, with Applications and Technology as its largest segment. Engineering activities fall under the Capgemini Engineering brand that includes specialists from Altran, a company acquired in 2020. The brand includes over 52,000 engineers and scientists in more than 30 countries across industries. Capgemini has strengthened its innovation and design capabilities in Denmark with the launch of Capgemini Invent. The company advantageously combines world-class strategy and UX, unique scientific and R&D background and engineering capabilities to help customers to expand their product portfolio.

Strengths

Combining AI and physical intelligence: Capgemini uniquely merges physical and real-world intelligence with novel AI and digital modeling solutions. This creates a value chain, from product concept development to marketplace release. Capgemini positions its digital twin capabilities to reduce developmental and testing costs through virtual prototyping. It helps customers to track and trace the product with actionable process information.

Offering a global innovation ecosystem: Applied Innovation Exchange (AIE) is a unique solution developed by Capgemini. It is a global platform for innovation, offering services such as pilot creation, prototyping and building quick working models – all of which are essential elements of any innovation ecosystem. Capgemini's open-nature innovation ecosystem utilizes emerging technologies and innovative thought leadership to build pathbreaking solutions for defined problem statements.

Helping customers with product innovation: Capgemini, with its global experience, capabilities, cutting-edge technologies and digital tools, is extending help to develop a scalable hyperloop. Hyperloop is a technologically advanced, revolutionary ground transportation system. The company has collaborated with a global airplane manufacturer to develop a robotic arm to automate helicopter avionics testing phases.

Caution

Capgemini has extensive experience managing complex technology implementation, creating opportunities to enter new industry verticals for product design and development. However, the company needs to focus strongly on domain-centric consulting complemented by a robust business execution team carrying out business imperatives.

Integrated Customer/ User Engagement

Integrated Customer/User Engagement

Who Should Read This Section

The report is relevant for Europe-based enterprises that are 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 realize the importance of offering services that provide customers with an omnichannel experience in their digital journey. Adopting digital technologies such as predictive analytics helps enterprises achieve personalized services and recommendations, thus leveraging and providing customers with tailor-made solutions.

Enterprises are exploring and inventing new business models to achieve world-class CX. Improved CX, UX and employee experience also improve enterprises' brand image.

Enterprises prefer providers to improve their customer and user engagement. These providers should have strong capabilities across omnichannel support, hyper-personalized experiences, advanced analytics services and security/privacy in the aftermarket services space.

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 journey.

Engineering leaders should read this report to better understand the relative strengths and weaknesses of providers offering intelligent aftermarket portfolios in the digital engineering space.
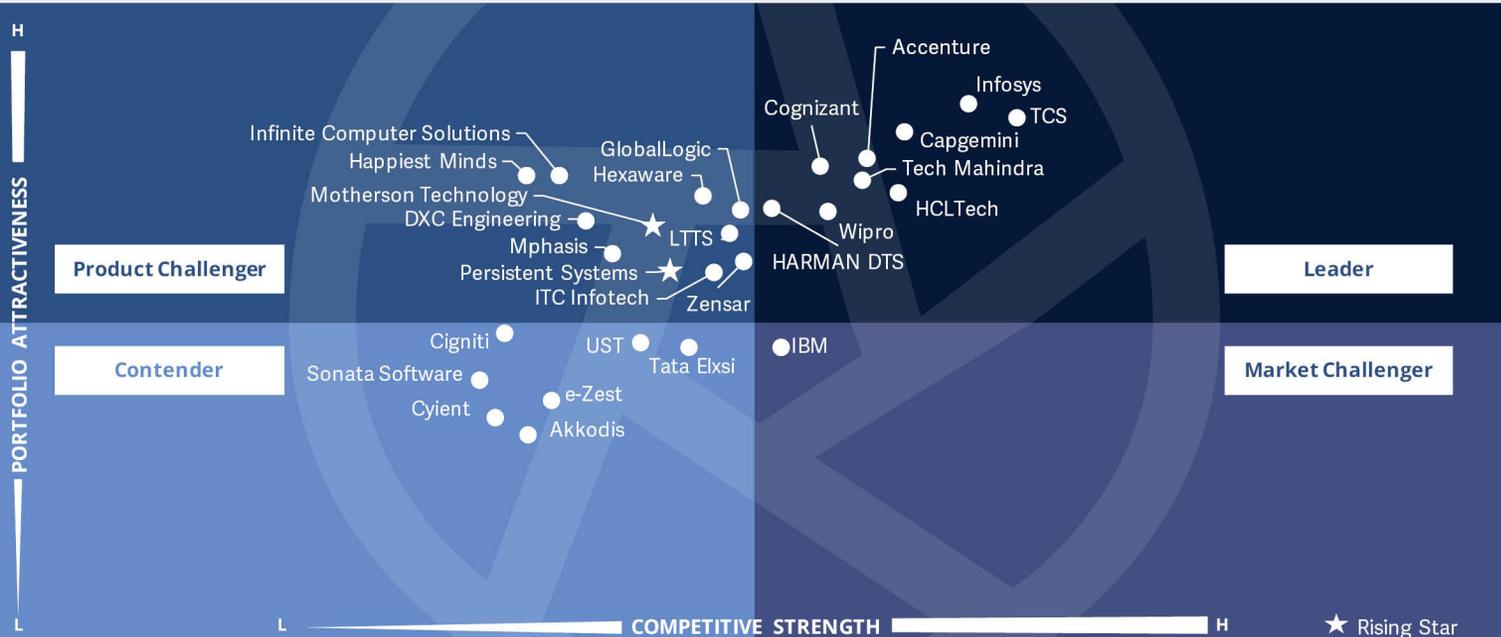
Software development and technology leaders should read this report to understand the relative positioning of providers and how their digital engineering offerings can impact an enterprise's transformation initiatives.

ISG Provider Lens™

Digital Engineering Services
Integrated Customer/User Engagement

Source: ISG RESEARCH

Europe 2023

Product Challenger

Contender

Leader

Market Challenger

H

L

PORTFOLIO ATTRACTIVENESS

L — COMPETITIVE STRENGTH — H

★ Rising Star

Infinite Computer Solutions
Happiest Minds
Motherson Technology
DXC Engineering
Mphasis
Persistent Systems
ITC Infotech

GlobalLogic
Hexaware

LTTS

Zensar

Accenture
Infosys
TCS
Capgemini
Tech Mahindra
HCLTech
Cognizant
Wipro
HARMAN DTS

Cigniti
Sonata Software
Cyient

UST
Tata Elxsi
e-Zest
Akkodis

IBM

This quadrant covers the digital capability for providers to enable their customer's or their own **product design based** on customer inputs, including **intelligent aftermarket services for product support**.

Shirish Kulkarni

Integrated Customer/User Engagement

Definition

The key capabilities for the providers in this space include providing 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 form 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.

Observations

European providers in the Integrated Customer/ User Engagement quadrant demonstrate a strong drive for better maturity and solutions. The key to success for these providers is to keep the customer's customer as a central focus and drive the CX processes around it.

In Europe, providers keep customers at the center of their capabilities and offer support through customer experience centers and customer success stories. However, only a few providers focus on the customer experience of real end users.

This quadrant evaluates providers on their software and virtual solutions development capabilities that enable the customers' processes and platforms in the CX space. The UX element is well-established in software engineering and is strongly exhibited by some providers.

Providers acknowledge the unique needs, expectations and preferences of their customers. It is critical to building long-lasting relationships with customers in every engagement. Some providers demonstrate

a special ability to offer customized digital platforms that shape their unified CX. Some also leverage the voice of the customer (VoC) concept to develop strong use cases. A few providers have specialized competency-building units as their differentiators.

From the 45 companies assessed for this study, 29 have qualified for this quadrant with nine being Leaders and two Rising Star.

accenture

Accenture centers its business around customer experience and aims to strengthen its relationship with clients. Accenture's dedicated recommendations of CX investments have helped clients achieve customer retention and acquisition, increased sales and stronger loyalty.

Capgemini

Capgemini caters to the unique needs, expectations and preferences of its clients. The company enables its clients to build long-lasting relationships with their customers and provide them with a personalized experience across all interactions.

cognizant

Cognizant specializes in engineering modern businesses. It helps clients modernize technology, reimagine processes and transform experiences to stay ahead of the competition.

HARMAN DTS

HARMAN DTS internal design team, Huemen, offers extensive expertise in CX in product design. The team of researchers, designers and problem-solvers works together to craft intuitive, immersive and meaningful experiences for industry leaders and brands.

HCLTech

HCLTech's offering in the CX space is led by digital support offerings augmented by aftermarket services, especially those for OEM customer segments.

Infosys

Infosys delivers AI-enabled intelligent aftermarket services, autonomous and remote services using cutting-edge digital technologies such as AR/VR/MR, digital twins and Industry 4.0 without compromising quality and security.

tcs TATA CONSULTANCY SERVICES

Building superior CX requires leveraging customer inputs, feedback and insights to drive business-centric use cases. **TCS** uses IoT-based connected services and introduces new, digitized possibilities that allow organizations to redefine CX.

Integrated Customer/User Engagement

Tech Mahindra has realized that the automotive industry is poised to transform, and CX is a crucial area where OEMs can differentiate their brand and products in the market. In the era of car sharing and ride hailing, consumer expectations are changing from car features to travel experiences.

Wipro creates extraordinary CX for clients using its design staff and front-line technical skills combined with continuous innovation and process excellence.

With a strong focus on innovation and customer-centricity, **Motherson Technology Services Ltd. – MTSL** (Rising Star) uses its domain expertise and the exponential power of technology to provide customized digital platforms to support CX to product development.

Persistent Systems' focuses on systems and services to empower the customer to shape unified experiences across one or multiple products while lowering the cost of design and development.

Leader

"Being personal in product features rather than personalized" is Capgemini's distinctive approach to CX."

Shirish Kulkarni

Capgemini

Overview

Capgemini is headquartered in Paris, France and operates in 50 countries. It has more than 359,600 employees worldwide. In FY22 the company generated €22 billion in revenue, with Applications and Technology as its largest segment. Its engineering activities fall under the Capgemini Engineering brand, including specialists from the 2020 acquisition of Altran. The brand includes over 52,000 engineers and scientists in over 30 countries across industries. The rise of AI has caused CX to take a giant leap forward, promising further progress and results. Capgemini has acquired Knowledge Expert SA, a digital transformation provider specializing in Pega technologies to enhance CX offerings across Europe.

Strengths

Leveraging AI in CX: Capgemini helps clients to build their CX journeys by leveraging AI-infused CX platforms. This starts with an evaluation, selection and implementation of the best-suited AI platforms for its clients and helping them to amplify UX. Capgemini's proprietary solutions utilize voice, text and vision data that trains the models for predictions and enables the platform's self-learning capability to deliver a seamless end-user experience.

Customer interaction design: Capgemini helps its clients capture the voice of the customer, which it identifies as an essential element to obtain end-user requirements. The company's interaction design approach creates visual representations for early testing, proof-of-concept and specifications for designers and developers. It enhances user satisfaction by improving the design usability, accessibility and experience.

Strengthening value stream for CX: Capgemini employs its Connected Marketing Engine framework for clients to capture the best-in-class CX for baselining the direct input feed for the product requirements gathering process. The framework uses customer data in real-time to deliver impactful emotional connections to feed into the CX repository. This approach helps in gaining product inputs, brand building and other ways.

Caution

Capgemini has a lead in leveraging AI for CX. However, to keep ahead of the curve in customer experience, the company should focus on building CX centers that address the changing client demands by leveraging mixed reality (MR), AR, VR, AI and ML.

Platforms and Applications Services

Who Should Read This Section

The report is relevant for Europe-based enterprises that are evaluating providers offering platforms and applications services to design and deliver platform engineering competencies.

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

Enterprises are increasingly showing interest in platformitization, a critical part of digital product design and development. This mindset has driven adoption of a collaborative digitized engineering process where platform and product development takes place in a distributed product engineering manner with mature DevOps and Agile practices. There is an increased need to include cloud-native and platform development lifecycle (PDLC) tools in application development for effective collaboration within engineering teams.

Providers should use outcome-driven business models based on customer expectations to address their changing requirements, and offer more accountability, quality and risk sharing.

Enterprises prefer providers that offer services across the application lifecycle, including application development, modernization and maintenance. Enterprises seek providers that offer integrated application services with a holistic transformation roadmap.

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 journey.

Engineering leaders should read this report to better understand the relative strengths and weaknesses of providers that offer platform development services in the digital engineering space.
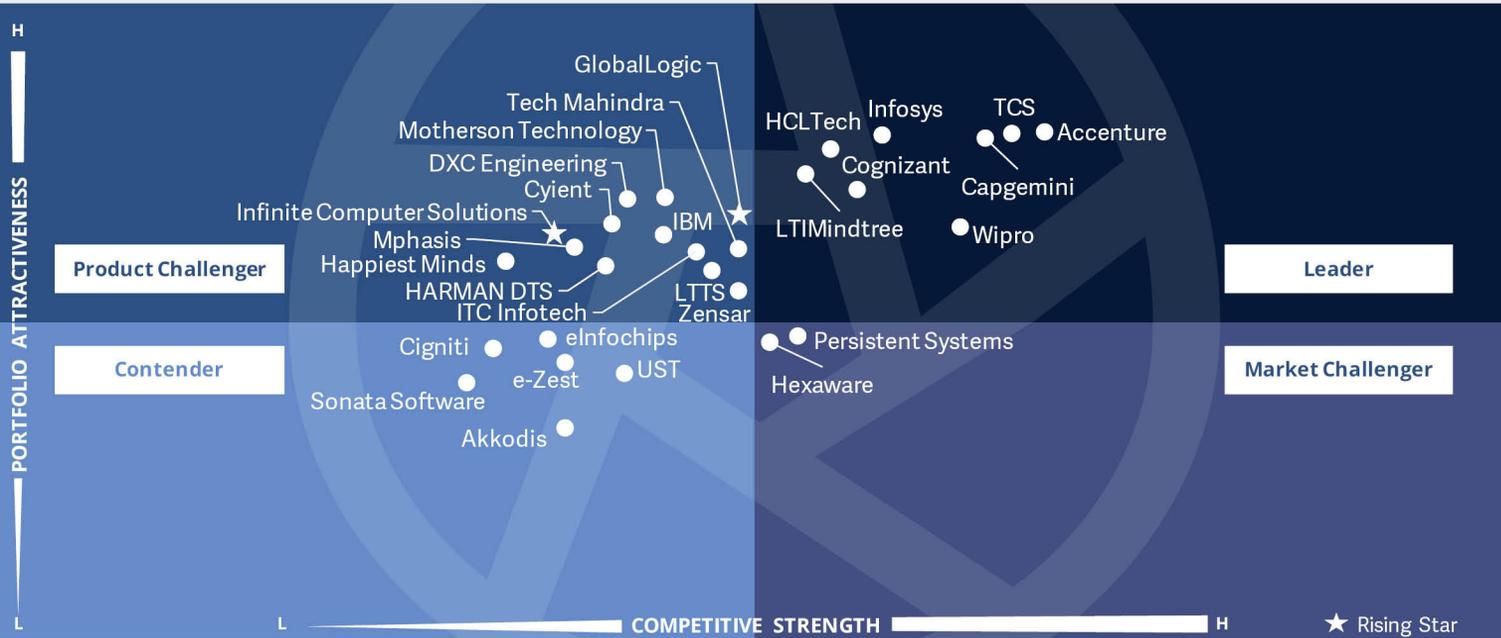
Software development and technology leaders should read this report to understand the relative positioning of providers and how their digital engineering offerings can impact an enterprise's transformation initiatives.

ISG Provider Lens™
Digital Engineering Services
Platform and Application Services

Source: ISG RESEARCH

Europe 2023

H

PORTFOLIO ATTRACTIVENESS

GlobalLogic
Tech Mahindra
Motherson Technology
DXC Engineering
Cyient
Infinite Computer Solutions
Mphasis
Happiest Minds
HARMAN DTS
ITC Infotech

HCLTech Infosys TCS Accenture
Cognizant Capgemini
LTIMindtree Wipro

IBM
LTTS
Zensar

Product Challenger

Leader

Cigniti eInfochips
e-Zest UST
Sonata Software
Akkodis

Persistent Systems
Hexaware

Contender

Market Challenger

L

L   COMPETITIVE STRENGTH   H   ★ Rising Star

This quadrant covers service providers' ability to abstract the repeatable and standardized portion of **end-to-end value chain** to ensure that the **processes are automated, reducing the time to deliver to market and carry out iterative incremental improvements**.

Shirish Kulkarni

Platforms and Applications Services

Definition

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 provide 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

1. **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.

2. **Technology platforms engineering capabilities:** Building and operating a common platform as a product for technology teams to reduce the time-to-market and complexity.

3. **Capabilities and proven experience:** Utilize integrated digital technology platforms and digital experience of connected systems, hardware and software.

4. **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.

5. **Cloud-native design skills:** Ability and agility to leverage cloud-based digital platform ecosystem offerings and services at speed.

6. **Engineering ADM competency:** ADM ability with a focus on smart, connected product, platform and service design and cloud-native, digital-native design.

7. **Product/service configurability and personalization abilities:** Use of behavioral intelligence and predictive analytics on real-time/streaming data from users and smart connected devices.

8. **Ability to augment and synchronize users' digital experience in real time:** Continuously generate value from connected intelligence within platform ecosystems.

9. **Ability to design, build, test, deliver, run and augment reusable functions/modules in digital platforms (including new, emerging, existing and combined.**

10. **Experience as code capability.**

Platforms and Applications Services

Observations

European providers demonstrate a high level of understanding, execution ability and maturity. This quadrant highlights providers' ability to build a native platform with integrations across the value chain, enabling processes to become more capable, mature and predictable while helping clients achieve their business objectives. The next level of maturity demonstrated by some of the European providers was influencing clients' end-to-end value chain and enabling the platform to deliver value to it.

The perspective of the platforms is maturing and becoming a mandatory need for enterprises to build their internal efficiency and extend the same to their customers. The platforms are required in the software, embedded, digital and hence physical products, solutions and services point-of-view and getting being adopted by many European providers. Some providers have displayed their ability to create an end-to-end platform covering the complete value-chain by enforcing abstraction

and standardization. Clients can leverage the platform's benefits, such as reduced operating costs, across the value chain.

A focus on platform engineering services helps clients achieve the best value from their engineering investments in building, operating and maintaining their high-performance, secure and highly scalable solutions.

Applications are a key element of digital interventions — whether they are the existing ones developed in-house, customized enterprise solutions or integration bits to build required interfaces across the value chain. Efforts are required to create an application map as part of the business transformation process, followed by application standardization, rationalization and integration.

The process of developing the platform and application layer to be self-reliant, self-improving and self-learning is supported by AI and ML. This helps build feedback loops to enhance the earlier stages of the platform development process based on the downstream results generated.

From the 48 companies assessed for this study, 35 have qualified for this quadrant with eight being Leaders and two Rising Stars.

accenture

Accenture delivered a front-end experience for Telkom Business' e-commerce site and identified an opportunity to develop a digital marketplace where merchants could easily purchase and sell their products and services and obtain the necessary business advice.

Capgemini

Capgemini builds on the expertise of in-house consulting agencies (Frog Design, Fahrenheit 212, Idean and Invent) and frameworks to effectively execute platforms and applications and to drive business transformations.

cognizant

Cognizant offers a wide range of services such as infrastructure modernization, packaged app upgrades, new custom development, custom migration to packaged apps, migration to SaaS/PaaS, service-oriented architecture (SOA) and instance consolidation, and hybrid and multicloud support.

HCLTech

HCLTech's end-to-end platform engineering services help clients achieve the best value from their engineering investments in building, operating and maintaining their high-performance, secure and highly scalable platforms.

Infosys

Infosys offers a plethora of platforms in digital, engineering and physical spaces, enforcing abstraction and standardization across the clients' value chain to deliver proven outcomes with quick release cycles and time-to-market.

LTIMindtree

LTIMindtree's self-learning and rapidly reconfigurable platforms advance the automation of physical processes beyond routine activities to include the less predictable ones, resulting in fewer resources involved in these activities and a workforce reconfiguration.

tcs TATA CONSULTANCY SERVICES

TCS' Bringing Life to Things™ IoT-based systems can create exponential value by adding digital intelligence to physical objects. Enterprises can create digital ecosystems without boundaries by integrating products, processes, plants and people.

wipro

Wipro places a high value on the cloud as a platform to stay relevant in the market as products, services and operations become increasingly connected.

GlobalLogic

GlobalLogic (Rising Star) integrates experience design and complex engineering to help clients visualize the possibilities of accelerating their transition into tomorrow's digital businesses with platforms and application solutions.

infinite

Infinite Computer Solutions (Rising Star) adopts a data-centric approach, AI and ML technologies, and a self-learning framework with inherent feedback loops to leverage the agile approach across the value chain and make platforms intelligent and self-learning.

"Capgemini has a comprehensive platform and application approach for helping customers address standardization and abstraction by reducing TCO."

Shirish Kulkarni

Capgemini

Overview

Capgemini is headquartered in Paris, France and operates in 50 countries. It has more than 359,600 employees worldwide. In FY22 the company generated €22 billion in revenue, with Applications and Technology as its largest segment. Capgemini has built a global, unified approach to apply Agile, DevOps, Cloud, API, data platforms and security in IT at an industrial scale. Capgemini helped a global airline leader to reduce costs and improve strategic sourcing, supplier negotiation and decision-making with comprehensive digital transformation.

Strengths

Focusing on product-based platforms: Capgemini has identified that customer needs to support their physical products getting built and released have variants and changes that need a platform to support standardization, abstraction and commonality. Capgemini has a global platform called ADMNext, which has a unified approach to cover the best-of-the-best aspects like Agile, DevOps, Cloud, API, data platforms and security in IT at an industrial scale. The key focus of the platform is to create an impact on outcome over output. This platform enables the major evolution for the customers to be product-centric to cover customer journeys, value streams and lean portfolio management.

Innovation using automation: Capgemini is addressing customer needs for introducing automation as a process element for processes of repetitive nature. Capgemini's Intelligent Automation Platform (CIAP) has the ability for rapid deployment of automation across customers' value chains. It has ease of automation, simple configuration and ability to connect the sub-systems. This technology-agnostic and AI-infused platform helps drive innovation through automation for live projects across the globe and across applications, IT and business operations, providing speed and flexibility at a lower cost.

Frameworks for business transformation: Capgemini provides its customers with IT interventions based on this business roadmap through its BI Modernization and Data Estate IT platform.

Such interventions are necessary for data-based IT transformation. Capgemini, by leveraging the power of automation and cloud, has helped customers to ingest, transform and consume data in real-time to achieve the business objectives like reduced total cost of ownership (TCO).

Caution

Platforms and applications as a ISG quadrant is a strong combination of software, engineering and real-world product platforms. Capgemini must focus on increasing its access to real-world platforms to keep ahead of the curve and build an entry barrier for the competition.

Intelligent Operations

Who Should Read This Section

The report is relevant for Europe-based enterprises with legacy factories and production plants that are evaluating providers offering intelligent operations across industries.

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

With everything built and controlled as "software & platform driven," businesses worldwide are accelerating their digitization journeys for the customer, supply chain, and internal operations. Industries are focusing on transforming their production units into intelligence-enabled ones. The demand for agile and intelligent software that controls target platforms or operations is gaining traction as an effective replacement of outdated and disparate systems with integrated, connected and cloud-based features that bring together real-time data for analysis, monitoring and production agility enablement.

Enterprises prefer providers that can develop customized software and platforms to achieve better workflow, industrialize processes and components, and accelerate innovation.

Engineering leaders should read this report to better understand better the relative strengths and weaknesses of providers offering intelligent operation portfolios, enabling them to lead digital journeys.
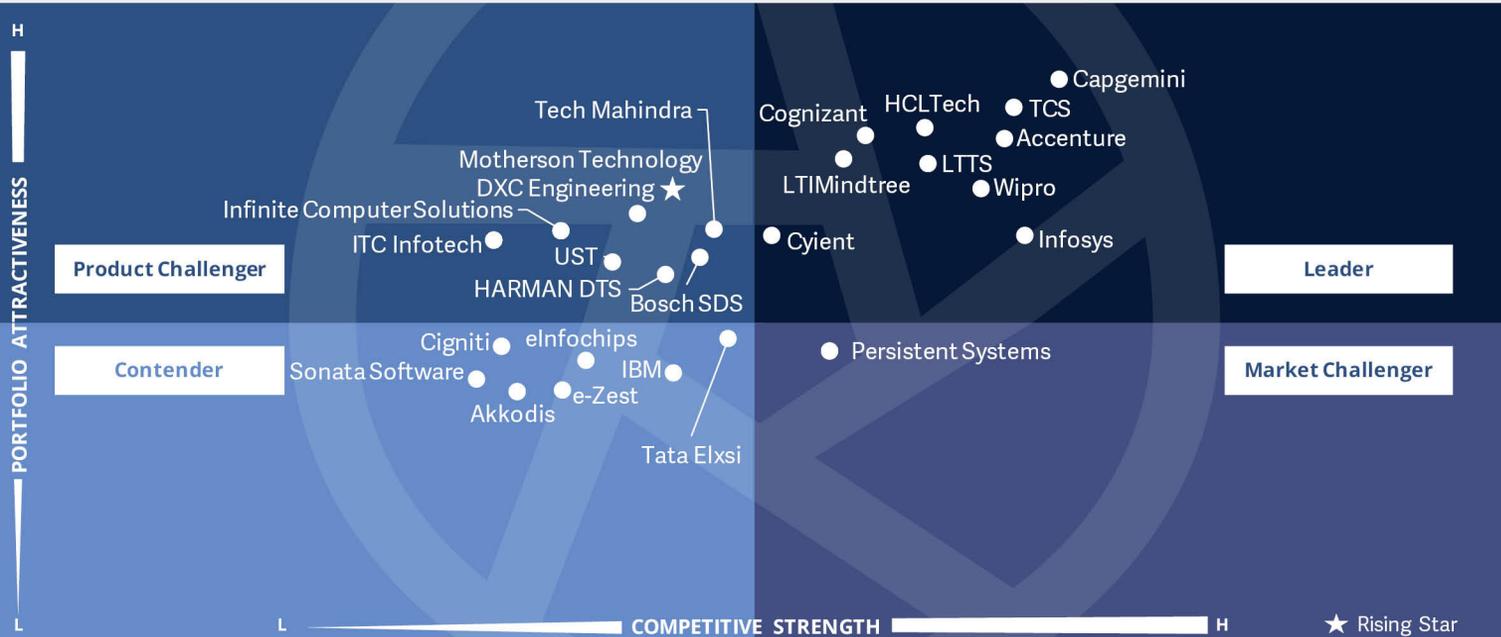
Manufacturing leaders should read this report to better understand the current landscape of digital engineering service providers in Europe.

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
Intelligent Operations

Europe 2023

PORTFOLIO ATTRACTIVENESS (H / L)

COMPETITIVE STRENGTH (L / H)

Quadrant labels:
- Product Challenger
- Contender
- Leader
- Market Challenger

Providers plotted:
- Capgemini
- HCLTech
- TCS
- Cognizant
- Accenture
- LTTS
- LTIMindtree
- Wipro
- Cyient
- Infosys
- Tech Mahindra
- Motherson Technology
- DXC Engineering ★
- Infinite Computer Solutions
- ITC Infotech
- UST
- HARMAN DTS
- Bosch SDS
- Cigniti
- eInfochips
- Sonata Software
- IBM
- Akkodis
- e-Zest
- Tata Elxsi
- Persistent Systems

★ Rising Star

This quadrant assesses digital services rendered by the providers to make **operations intelligent, self-regulated, reliable and self-correcting** using digital interventions including **IIoT, smart manufacturing and Industry 4.0 guidelines.**

Shirish Kulkarni

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.

Observations

Providers in Europe specialize in helping clients achieve intelligent, standardized, efficient, cost-effective, reliable and predictable operations.

This quadrant assesses providers that focus on building their own software and virtual products. Their processes involve end-to-end and self-learning products to prototype, and quick, agile iterations focus on rigorous testing. Some providers also use DevOps in their integration processes.

The real crux of helping the customers' digital intelligent operations was very ably articulated by some of the providers with powerful use cases and customer success stories. These providers possess a deep market presence and understanding of the customer ecosystem. They help customers to achieve business KPIs such as throughput, overall equipment effectiveness (OEE) for machines, machine lines and plants across geographies.

The use of connected assets, connected operations, connected supply chains and connected workforces leveraging Industry 4.0 were the key trends defining this quadrant. Some providers demonstrated expertise in concepts such as plant-in-a-bag and plant-on-a-fingertip. The incorporation of engineering R&D across customers' value chains has helped some providers to gain deeper insights and control of the operations ecosystems. It has also helped them to showcase their strength in intelligent operations, which are based on strong operational frameworks, to address the latest trends such as Industry 5.0.

The providers are also prioritizing end-to-end services and stronger use cases such as manufacturing quality and track-and-trace solutions to differentiate themselves and add value to their customers.

From the 40 companies assessed for this study, 27 have qualified for this quadrant with 10 being Leaders and one Rising Star

accenture

Enabled by SynOps, **Accenture** has the unique ability to build and scale future-ready operating models with human-machine intelligence to drive sustainable growth with speed, certainty and security.

Capgemini

Capgemini leverages its Factory 4.0 architecture and system integration solutions, including those for IT/OT, to create a niche in the market.

cognizant

Cognizant focuses on inorganic growth with targeted M&As to enhance the capabilities of its offerings.

CYIENT

Cyient showcases its strength in intelligent operations based on strong operational frameworks to address the latest trends such as Industry 5.0.

HCLTech

HCLTech's Plant WorkBlaze unified platform provides a global view of critical IT/ OT data for effective production, operations and reduced downtimes. Its automated remediation mechanism enables pre-emptive maintenance of IT and OT systems.

Infosys

Infosys leverages its Connected Operations on Cloud, a suite of cloud-agnostics modular applications that act as the connective tissue between machines, processes, systems and people, to achieve operational excellence.

LTIMindtree

LTIMindtree's Material NxT is a fully integrated track-and-trace solution for intelligent operations that allows customers to manage materials across supply chains in real time and from anywhere. Intuitive dashboards make it easy to accurately monitor material availability.

LTTS

LTTS benefits from its strong foothold in the ER&D and operations space. The company uses its deep experience and insights from existing customers to open expansion opportunities to other industries and geographies.

TATA CONSULTANCY SERVICES

With its Digital Manufacturing Platform (DMP), a cross-industry platform solution, **TCS** seeks to enable digital capabilities for an enterprise across four themes of connected assets, connected operations, connected supply chain and connected workforce while leveraging an Industry 4.0 framework.

wipro

Through its Enterprises Operation Transformation Unit, **Wipro** enables companies to reach new levels of efficiency through intelligent automation initiatives while remaining focused on delivering customer-specific services to achieve exponential growth.

motherson

Motherson Technology Services Ltd. (MTSL) (Rising Star) is gaining market visibility through Genie, a cognitive, industry-agnostic, multichannel and multilingual conversational platform. The platform has customized interactive operations dashboards leveraging the power of AI and ML, which connect to the users' systems.

Capgemini

"Capgemini provides reference architecture and solutions for proven intelligent operations to increase proof of value and scale up for the operations to handle larger volumes and product variants, leveraging digital twins."

Shirish Kulkarni

Overview

Capgemini is headquartered in Paris, France and operates in 50 countries. It has more than 359,600 employees worldwide. In FY22 the company generated €22 billion in revenue, with Applications and Technology as its largest segment. Engineering activities fall under the Capgemini engineering brand, including specialists from Altran, a company acquired in 2020. The brand consists of 52,000 engineers and scientists in more than 30 countries across industries. Capgemini offers unique digital capabilities like production digital twin for discrete manufacturing.

Strengths

IT-OT confluence in industrial operations: Capgemini integrates clients' IT & OT systems by leveraging software integration frameworks, proven methodologies and in-depth knowledge of various IT & enterprise applications. This is illustrated by enterprise resources planning (ERP) systems and OT systems like product lifecycle management (PLM), manufacturing execution system (MES), supervisory control and data acquisition (SCADA), positioning Capgemini as a thorough operations process management specialist.

Digital transformation with 3D technologies: Capgemini is enabling customers with 3D technology, which is crucial in maintaining visual, digital and historical 3D views of the industrial facilities. It helps customers in managing manufacturing and technological processes for the use case of the track-and-trace. This tracking data also serve as supporting evidence for getting the correct information, which is searchable and at the fingertips. Capgemini's Open Cascade forms an integral part of the digital engineering and manufacturing services to enable 3D representations.

Chatbot on plant floors: Capgemini is making operations intelligent through chatbots in challenging environments like plant floors. Capgemini has enabled a specific use case of the chatbot to retrieve cars with specific parts, the user query is mapped to a dynamic query to fetch data in real time.

Caution

Capgemini already has sufficient established credentials in the intelligent operations space. Its strength in the technology can be complemented sufficiently with the domain expertise in the industry. Deeper access to the partner ecosystem eases the optimum leverage of operations to run almost around-the-clock.

Appendix

The ISG Provider Lens™ 2023 – Digital Engineering Services - Europe study analyzes the relevant software vendors/service providers in the Europe, 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

Shirish Kulkarni
Lead Analyst

Shirish Kulkarni 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.

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About Our Company & Research

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™

ISG Research™ provides subscription research, advisory consulting and executive event services focused on market trends and disruptive technologies driving change in business computing. ISG Research™ delivers guidance that helps businesses accelerate growth and create more value.

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ISG

ISG (Information Services Group) (Nasdaq: III) is a leading global technology research and advisory firm. A trusted business partner to more than 900 clients, including more than 75 of the world's top 100 enterprises, ISG is committed to helping corporations, public sector organizations, and service and technology providers achieve operational excellence and faster growth. The firm specializes in digital transformation services, including automation, cloud and data analytics; sourcing advisory; managed governance and risk services; network carrier services; strategy and operations design; change management; market intelligence and technology research and analysis.

Founded in 2006, and based in Stamford, Conn., ISG employs more than 1,600 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.

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