



***ISG** Provider Lens™

2022

Digital Engineering
Services 2022

imagine your future®

ISG (Information Services Group) (NASDAQ: III) is a leading global technology research and advisory firm. A trusted business partner to more than 700 clients, including 75 of the top 100 enterprises in the world, 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; technology 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 1,300 professionals operating in more than 20 countries — a global team known for its innovative thinking, market influence, deep industry and technology expertise, and world-class research and analytical capabilities based on the industry's most comprehensive marketplace data. For more information, visit www.isg-one.com.



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Introduction

Engineering services have undergone significant transformations in the recent past, with paradigm shifts observed in manufacturing and product development across industry spectrums from automotive and aircraft original equipment manufacturers (OEMs) to healthtech and smart infrastructure systems developers. With the rapid industrial application of AI, machine learning (ML), predictive analytics, IoT, 5G, intelligent automation and other technologies, foundational engineering services such as product innovation, ideation, strategy and design, R&D and testing services, operations, product life cycle management (PLM) and aftermarket services have become digitized.

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

Changes in engineering services have been further accentuated by the COVID-10 pandemic. For example, companies, industries and operations ranging from traditionally slow changing, highly regulated healthtech and pharma R&D firms to manufacturing supply chains and distribution networks had to quickly reimagine, redesign and reinvent themselves by leveraging digital capabilities to save millions of lives.

The ISG Provider Lens™ Digital Engineering Services 2022 study analyzes these evolving trends in with a deeper focus on product and service development, followed by connected and intelligent operations across discrete sectors such as automotive, aerospace, medical equipment and additional flow, continuous and process industries. It also evaluates providers based on their customer experience engineering value delivery and associated competencies.

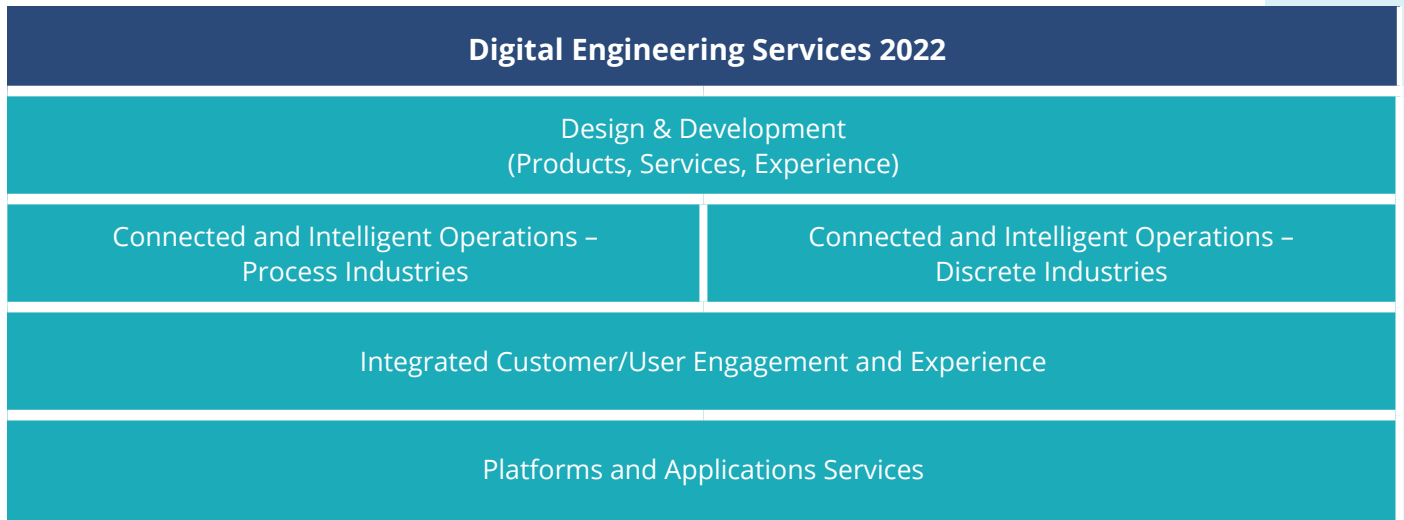
The ISG Provider Lens™ study offers IT-decision makers:

- Transparency on the strengths and weaknesses of relevant providers
- Differentiated positioning of providers by new and emerging market segments
- Perspective on the U.S. and EU markets

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 new engagements.

Quadrants Research

As part of this ISG Provider Lens™ quadrant study, we are introducing the following five quadrants on Digital Engineering Services:



Source: ISG 2022

Design and Development (Products, Services and Experiences)

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

Eligibility criteria:

- **Breadth of lifecycle coverage:** Support for the product strategy, new product design and development, integrate and scale, and support/maintain stages
- **Proven experience in new product ideation, innovation and engineering:** Use of design thinking capabilities, new product/service strategy formulation requirements analysis, market feedback/research
- **Digital customer experience design competency:** User/persona-based journey mapping, design and storyboarding, UI/UX design, industrial design, service design, interaction design
- **New software operating models:** Ability to support Agile, continuous and rapid development processes
- **Design for X capabilities:** Addressing security, quality and sustainability by design for cost
- **Digital technology and capabilities:** Covering new product/service/experience design, such as using digital twins, rapid prototyping and testing, PLM, data and model-driven engineering, virtualization, cloud-native design, AI, machine learning, human-machine interface (HMI), conversational AI, IoT and AIoT, edge and 5G platforms
- **Ability to ideate, strategize, design and develop new connected digital experiences:** Functionality and use cases of augmented/virtual/mixed reality and extended/immersive reality, additive manufacturing, 3D printing, linked services, products, features and other digital systems, networks and value chains

Connected and Intelligent Operations – Discrete Industries

This quadrant assesses service providers that offer intelligent operations to clients in discrete industries with legacy factories and production plants and have industrial operations. They offer smart and new digital technologies and methods, and help set up intelligent greenfield plants and operations.

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 and supply chain
- **Breadth and depth of coverage:** In connected operations for discrete industries with proven examples
- **Experience in IT-OT integration:** Specifically across data, security and people aspects
- **Capabilities, partner networks and experience in applying Industry 4.0 technologies and digital factory/smart factory operations:** Relevant technologies and capabilities include digital twin, digital thread, PLM, Industrial IoT (IIoT), data engineering, virtualization, cloud engineering, additive manufacturing, 5G and edge intelligence, manufacturing execution system (MES), manufacturing operations management (MOM), blockchain, industrial cybersecurity and security operations center, robotics and flexible, personalized and customized production
- **Demonstrated capabilities in implementing and operating digital supply chain functionality:** This includes continuous, partial or fully autonomous, and real-time security and quality monitoring using AI technology stacks including computer vision, image and video processing, streaming analytics, deep learning applications and integrated intelligent automation
- **Asset performance, maintenance and lifecycle management:** Covering asset performance monitoring, maintenance schedules, lifetime value optimization and predictive maintenance
- **ESG compliance resources:** Support for environmentally sustainable smart operations, for example by using digital technology-based real-time and autonomous monitoring systems for controlling and preventing operational hazards in process industries
- **Smart workforce management:** Workforce management and safety management services, digital virtual assistant technologies, including robotic process automation (RPA), AI, HMI, etc.
- **Demonstrated experience with new business/operating models:** For example, new ways of operating and optimizing highly flexible and intelligent production and assembly lines, supporting new business models of personalized and customer-configurable digital products

Connected and Intelligent Operations – Process Industries

This quadrant assesses service providers that offer intelligent operations to process industries. They help make legacy plants, industrial operations and more complex systems smart with new digital technologies.

Eligibility criteria:

- **Design and implementation capabilities:** Smart production inflow/continuous processes, including technologies, methods, structures and processes for continuous/flow manufacturing and process industries
- **Experience with applying digital technologies:** This includes digital twin, digital thread, real-time AI and machine learning use cases for remote, field and hazardous operations management, real-time data engineering, industrial cybersecurity and cloud engineering
- **Experience in IT-OT integration:** Plant engineering and digital supply chain experience across process industries
- **Proven examples and experiences:** In-depth experience and coverage across process industries
- **Demonstrated capabilities in implementing and operating digital supply chain functionality:** Continuous, partial or fully autonomous, and real-time security and quality monitoring using AI technology stacks including computer vision, image and video processing, streaming analytics, deep learning applications and integrated intelligent automation
- **Asset performance monitoring, maintenance and lifecycle management ability in process industries:** Covering asset performance, maintenance schedules, lifetime value optimization and predictive maintenance
- **ESG compliance resources:** Environmentally sustainable smart operations in process industries, for example, by using digital technology based real-time and autonomous monitoring systems for controlling and preventing operational hazards in process industries
- **Smart AI-augmented workforce support:** Workforce management-enabled digital virtual assistant technologies including RPA, AI, HMI, etc.
- **Experience in new business and operating models:** For example, running autonomous field support operations in remote and hazardous production and distribution lines using technologies such as IoT, computer vision powered, augmented reality, virtual reality and extended reality.

Integrated Customer/User Engagement

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

Eligibility criteria:

- **Breadth:** Of industry coverage.
- **Predictive maintenance competency:** Use of data analytics, AI and machine learning in maintenance, field service management and self-healing services.
- **Warranty management, lifecycle management and maintenance, repair and operations (MRO) capabilities:** Focus on digital experience platforms service, customer engagement, query resolution and support.
- **Innovation in aftermarket services interfaces:** Including UI/UX design and engineering and product/service personalization.
- **Experience with new business and service models:** For example, providing remote in-field customer service and assistance through IoT solutions and AR/VR-powered digital avatars and virtual customer service assistants, with real-time knowledge support and predictive actions recommendation engines.
- **Content delivery capability:** Autonomous and intelligent content delivery, on-demand, AI-powered self-service knowledge support, for example using natural language processing (NLP), natural language understanding (NLU) and natural language generation (NLG), conversational AI and virtual agent support.
- **Leverage customer and market feedback:** Value-added utilization of customer, field and market feedback regarding products, services, experiences and performances in the field; autonomous knowledge networks that loop field knowledge into the input layers of design and development capabilities.

Platforms and Applications Services

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

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 (for example via network effects) or to deliver a better customer experience
- **Technology platforms engineering:** Building and operating a common platform as a product for technology teams to reduce time to market and complexity by providing self-service deployments and ease of operating applications in production
- **Capabilities and proven experience:** Utilize integrated digital technology platforms and digital intelligence and experience networks of connected systems, things and people, and de-link hardware and software
- **Core platform strategy and engineering capabilities:** Shift from a product to a platform mentality by architecting and developing an application programming interface (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, building and offering flexible new experiences by combining next-generation networks, 5G and edge analytics, federated AI on real-time streaming data, and augmented, virtual and mixed reality, plus real and virtual application capabilities from integrated digital cloud platforms
- **Engineering ADM competency:** Application development and maintenance ability with focus on smart, connected product, platform and service design, and cloud-native, digital-native design
- **Ability to provide product/service configurability and personalization:** Use of behavioral intelligence and predictive analytics on real-time/streaming data from users and smart connected devices
- **Ability to augment and synch users' digital experience in real time:** Continuously generating value from connected intelligence within platform ecosystems
- **Ability to design, build, deliver, run and augment reusable functions/modules in digital platforms (including new, emerging, existing and combined):** Offer pre-curated services, microservice bundles, accelerators, integrators, knowledge graphs and integrated intelligence and analytics on connected devices
- **Experience as code capability:** Rapid design-to-release cycles from connected intelligent, product-service experience platforms

Quadrants by Region

Quadrants	Global	USA	Europe
Design & Development (Product, Services, Experience)	Overview	✓	✓
Connected and Intelligent Operations - Discrete Industries	Overview	✓	✓
Connected and Intelligent Operations - Process Industries	Overview	✓	✓
Integrated Customer/User Engagement and Experience	Overview	✓	✓
Platforms and Applications Services	Overview	✓	✓

Schedule

The research phase falls in the period between November and December 2021, during which survey, evaluation, analysis and validation will take place. The results will be presented to the media in March 2022.

Milestones	Beginning	End
Launch	Nov 29, 2021	
Survey Phase	Nov 29, 2021	Dec 24, 2021
Sneak Preview	March 2022	
Press Release	Apr 2022	

Access to Online Portal

You can view and download the questionnaire from [here](#) using the credentials you have already created, or refer to instructions provided in the invitation email to generate a new password. We look forward to your participation.

Please refer to [this link](#) to view/download the ISG Provider Lens™ 2022 research agenda.

Research Production Disclaimer:

ISG collects data for the purposes of writing research and creating provider/vendor profiles. The profiles and supporting data are used by ISG advisors to make recommendations and inform their clients of the experience and qualifications of any applicable provider/vendor for outsourcing work identified by the clients. This data is collected as part of the ISG FutureSource process and the Candidate Provider Qualification (CPQ) process. ISG may choose to only utilize this collected data pertaining to certain countries or regions for the education and purposes of its advisors and not to produce ISG Provider Lens™ reports. These decisions will be made based on the level and completeness of information received directly from providers/vendors and the availability of experienced analysts for those countries or regions. Submitted information may also be used for individual research projects or for briefing notes that will be written by the lead analysts.

ISG Star of Excellence™ – Call for nominations.

The Star of Excellence is an independent recognition of excellent service delivery based on the concept of “Voice of the Customer.” The Star of Excellence is a program, designed by ISG, to collect client feedback about service providers’ success in demonstrating the highest standards of client service excellence and customer centricity.

The global survey is all about services that are associated with IPL studies. In consequence, all ISG Analysts will be continuously provided with information on the customer experience of all relevant service providers. This information comes on top of existing first-hand advisor feedback that IPL leverages in context of its practitioner-led consulting approach.

Providers are invited to [nominate](#) their clients to participate. Once the nomination has been submitted, ISG sends out a mail confirmation to both sides. It is self-evident that ISG anonymizes all customer data and does not share it with third parties.

It is our vision that the Star of Excellence will be recognized as the leading industry recognition for client service excellence and serve as the benchmark for measuring client sentiments.

To ensure your selected clients complete the feedback for your nominated engagement please use the Client nomination section on the Star of Excellence [website](#).

We have set up an email where you can direct any questions or provide comments. This email will be checked daily, please allow up to 24 hours for a reply. Here is the email address: ISG.star@isg-one.com

Partial list of companies being invited for the survey

Are you in the list or do you see your company as relevant provider that is missing in the list? Then feel free to contact us to ensure your active participation in the research phase.

3D Systems	Bertrandt	Happiest Minds
aarcorp	Birlasoft	Harman
Accenture	Bosch	Harris Corp (I3harris)
Accolite Digital	Cadence	HCL
AEE GmbH	Capgemini	Horiba
Aernnova	Caresoft Global	Hyde Group
Air France KLM E&M	Cartesiam/ST	IAV
AKKA	Centum	IBM
Altair engineering	CGI	Ignitarium
Alten	Cognizant	Imagination Technologies
Ansys	Continental	Infogain
APL Group	CS Communication and Systems	Infostretch
Applus Idiada Group	CyberX/Microsoft	Infosys
Argus	Cyient	Innominds
Arrk Engineering	Daffodil Software	in-tech GmbH
ASAP Gruppe	DEP	Invecas
ASM technologies	DXC Technology	invenio
Aspire Systems	EDAG	IPG Automotive
Atkins	eInfochips	ITC Infotech
Atos	Embitel	Ittransition
Ausy	Encora	KPIT
Aviation Technical Services	Esterline	Kyndryl
AVL	Expleo	L&T Technology Services
Axiscades	e-Zest	Leichtwerk AG
Bayshore Networks (OPSWAT)	Ferchau	Leonardo company
Belcan	FEV	LTI
Bentley Systems	GlobalLogic	Mahle Powertrain

Microland	Synapse Design
Mindteck	Tata Elxsi
Mindtree	Tata Technologies
Mirafratechnologies	TCS
Mphasis	Tech Mahindra
Musala Soft	To The New
MVI Group	UST
Ness Engineering	Valmet
N-iX	Verve
p3-group	Virtusa
Porsche Engineering	Volansys
QuEST Global	Vuram
R Systems	VVDN Technologies
Redeem	WillowTwin
Rheinmetal Technical Publications	Wipro
RLE International	woodward
RUAG Group	Zensar
sabenatechnics	
Safran	
SAIC	
Sasken	
SCADAfence	
Schaeffler Engineering	
SIA Engineering Company Ltd	
Siemens	
SLK Group	
Smokescreen/Zscaler	
Sogeclair	

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ISG Provider Lens™ QCRT Program Description

ISG Provider Lens offers market assessments incorporating practitioner insights, reflecting regional focus and independent research. ISG ensures advisor involvement in each study to cover the appropriate market details aligned to the respective service lines/technology trends, service provider presence and enterprise context. In each region, ISG has expert thought leaders and respected advisors who know the provider portfolios and offerings as well as enterprise requirements and market trends. On average, three advisors participate as part of each study's Quality & Consistency Review Team (QCRT). The QCRT ensures each study reflects ISG advisors' experience in the field, which complements the primary and secondary research the analysts conduct. ISG advisors participate in each study as part of the QCRT group and contribute at different levels depending on their availability and expertise.

The QCRT advisors:

- Help define and validate quadrants and questionnaires,
- Advise on service provider inclusion, participate in briefing calls,
- Give their perspectives on service provider ratings and review report drafts.

The ISG Provider Lens QCRT program helps round out the research process, supporting comprehensive research-focused studies.

Quality & Consistency Review Team for this study



Gaurav Gupta

Partner and Global Head, Digital Engineering, U.K.



Vishnu Andhare

Consulting Manager, DACH

Do you need any further information?

If you have any questions, please do not hesitate to contact us at isglens@isg-one.com.