

# Digital Engineering Services

Analyzing Digital Engineering Capabilities from  
Design to Customer Experience



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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.

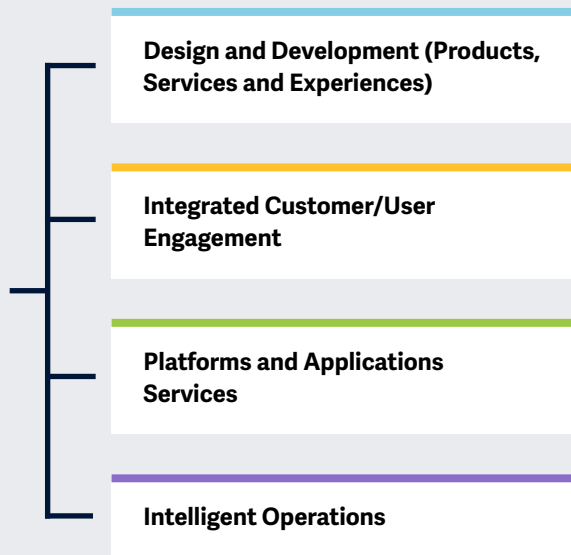
The market has moved in a synchronized manner toward digital engineering transformation services to provide overarching digital product strategy, providing new capabilities of real time and concurrent digital product design, along with data-driven PLM, flexible intelligent manufacturing operations and 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.



# Key focus areas for Digital Engineering Services 2023

Simplified Illustration Source: ISG 2022



## The ISG Provider Lens™ 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.



## Design and Development (Products, 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



### Definition

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

Customer and user engagement services are crucial as they directly affect the customer and the end-users of the product or services. The degree of customer satisfaction achieved vs their expectations eventually influences their repeat purchase decision and 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. Predictive maintenance

**competency:** Use of data analytics, AI and machine learning in maintenance, field service management and self-healing services

#### 2. Warranty management, lifecycle management and maintenance, repair and operations (MRO) capabilities:

Focus on digital experience platforms service, customer engagement, query resolution and support

#### 3. Innovation in aftermarket services interfaces:

Including UI/UX design and engineering

and product/service personalization

#### 4. 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

#### 5. Content delivery capability:

Autonomous and intelligent content distribution, on-demand, AI-powered self-service knowledge help, such as using NLP, NLU, NLG, conversational AI, and virtual agent support

#### 6. Leverage customer and market feedback (VoC):

Value-added utilization of customer, field and market feedback across all relevant channels, including social media and web **Track and trace capability across value chain**



### Definition

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

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

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

### Eligibility Criteria

- 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**



### 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

- 1. 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
- 2. Breadth and depth of coverage** in connected operations for different types of industries in the target regions, with proven examples
- 3. Experience in OT solutions,** specifically across data, security and people aspects
- 4. 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
- 5. Asset performance, maintenance and lifecycle management:** Covering asset performance monitoring, maintenance schedules, lifetime value optimization and predictive maintenance
- 6. ESG compliance resources:** Support for environmentally sustainable smart operations.
- 7. 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





## Quadrants By Region

As part of this ISG Provider Lens™ quadrant study, we are introducing the following four quadrants on Digital Engineering Services 2023.

Quadrant	U.S.	Europe
Design and Development (Products, Services and Experiences)	✓	✓
Integrated Customer/User Engagement	✓	✓
Platforms and Application Services	✓	✓
Intelligent Operations	✓	✓



The research phase falls in the period between December and February 2023, during which survey, evaluation, analysis and validation will take place. The results will be presented to the media in April 2023.

### Milestones

	Beginning	End
Survey Launch	December 19, 2023	
Survey Phase	December 29, 2023	February 02, 2023
Sneak Preview	March 2023	April 2023
Press Release & Publication	April 2023	

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Please refer to the [link](#) to view/download the ISG Provider Lens™ 2023 research agenda

### Access to Online Portal

You can view/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!

### 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 the work identified by 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 produce ISG Provider Lens™ reports. These decisions will be made based on the level and completeness of the 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](mailto:ISG.star@isg-one.com)



## Contacts For This Study



**Shirish  
Kulkarni**

**Lead Analyst - Europe**



**Tapati  
Bandopadhyay**

**Lead Analyst – U.S.**



**Srinivasan PN**

**Research Specialist**



**Yeshashwi  
Nagarajan C**

**Global Project  
Manager**



### ISG Provider Lens™ Advisors Involvement Program

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 and 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.

### ISG Advisors to this study



**Gaurav  
Gupta**

**Partner and Global  
Head, Digital  
Engineering Services**



**Shubham  
Rajvanshi**

**Principal Consultant,  
Engineering Services**



**Rajeev  
Chatrath**

**Principal Consultant,  
Engineering Services**



**Rohit  
Ravichandran**

**Consulting Manager,  
Engineering Services**



## Invited Companies

**If your company is listed on this page or you feel your company should be listed, please contact ISG to ensure we have the correct contact person(s) to actively participate in this research.**

\* Rated in previous iteration

Accenture\*

Accolite Digital\*

Akkodis

Aras

AVEVA

AVL\*

Bertrandt\*

Birlasoft\*

BoschSDS\*

Capgemini\*

Caresoft Global\*

Cognizant\*

Cybage

Cyient\*

DXC Technology\*

EDAG\*

eInfochips\*

EPAM\*

Expleo

e-Zest\*

Ferchau\*

FEV\*

GlobalLogic\*

Happiest Minds\*

HARMAN Digital Transformation  
Solutions (DTS)\*

HCLTech\*

Hexagon

Hexaware\*

Hitachi Vantara

IAV\*

Infostretch\*

Infosys\*

Innominds

Itransition\*

KPIT\*

LTIMindtree\*

LTTS\*

MaintainX

Marelli

Mindteck

Mphasis\*

Ness Engineering

p3-group

Persistent Systems\*

QuEST Global\*

Quinnox

Sasken

Siemens

Stork-flour\*

Tata Elxsi\*

Tata Technologies

TCS\*

Tech Mahindra\*

UST\*

Virtusa\*

VVDN Technologies\*

Wipro\*

Wood PLC\*

Zensar\*



### \*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.

ISG offers research specifically about providers to state and local governments (including counties, cities) as well as higher education institutions. Visit: [Public Sector](#).

For more information about ISG Research subscriptions, please email [contact@isg-one.com](mailto:contact@isg-one.com), call +1.203.454.3900, or visit [research.isg-one.com](http://research.isg-one.com).

### \*ISG

ISG (Information Services Group) (Nasdaq: III) is a leading global technology research and advisory firm. A trusted business partner to more than 800 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 1,300 digital-ready professionals operating in more than 20 countries—a global team known for its innovative thinking, market influence, deep industry and technology expertise, and world-class research and analytical capabilities based on the industry's most comprehensive marketplace data. For more information, visit [www.isg-one.com](http://www.isg-one.com).



**DECEMBER, 2022**

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**REPORT: DIGITAL ENGINEERING SERVICES**