Everest Group®

Everest Group Digital Twin Services PEAK Matrix® Assessment 2023

Focus on TCS
October 2023

Introduction

As enterprises aim to become business resilient and competitive in a post-pandemic era, they are increasingly focusing on becoming digitally unified. This enterprise requirement, along with the advances in next-generation technologies, has given rise to the concept of digital twin. This technology is defined as a virtual replica of physical products, processes, and systems that leverages the physical entity's real-time data for decision-making and prediction. digital twin is aiding firms in reducing downtime, better tracking and tracing of products, and better monitoring of asset conditions by simulating multiple scenarios. While industrial verticals are at the forefront of its adoption, digital twin is also finding interest among consumer-facing industries, that are increasingly experimenting with the technology.

The need for accelerated time-to-market of digital twins, smoother IT/OT integration efforts, increased data and infrastructure security, and talent crunch across the various enabling technologies require enterprises to partner with providers that can aid them in overcoming these challenges while facilitating end-to-end digital twin implementations.

In this research, we present an assessment of 21 digital twin service providers featured on the [Digital Twin Services PEAK Matrix® Assessment 2023](). Each service provider profile offers insights into the strengths and limitations across themes such as investments, vision, strategy, and case studies. The assessment is based on Everest Group's annual RFI process for calendar year 2022, interactions with leading digital twin service providers, client reference checks, and an ongoing analysis of the digital twin services market.

The full report includes the profiles of the following 21 leading digital twin service providers featured on the digital twin services PEAK Matrix:

- **Leaders:** Accenture, Capgemini, Eviden, HCLTech, IBM, TCS, and Wipro
- **Major Contenders:** Apexon, Cognizant, Cyient, Hitachi, Infosys, LTI Mindtree, LTTS, NTT Data, Sopra Steria, and Tech Mahindra
- **Aspirants:** Brillio, DXC Technology, Happiest Minds, and Harman International

Scope of this report

Geography
Global
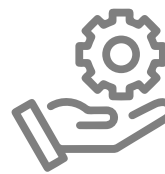
Providers
21

Services
Digital twin

Digital Twin Services PEAK Matrix® characteristics

Leaders

Accenture, Capgemini, Eviden, HCLTech, IBM, TCS, and Wipro

- Leaders exhibit a futuristic vision for digital twin that is aimed at achieving operational efficiency and establishing an intelligent enterprise
- Leaders are focusing on forging a strong partnership ecosystem that goes beyond the hyperscalers and IoT platform providers to include specialist digital twin providers to strengthen their digital twin services portfolio
- Leaders' strong and well-balanced capabilities in providing engineering as well as IT services is instrumental in scaling digital twin initiatives for customers

Major Contenders

Apexon, Cognizant, Cyient, Hitachi, Infosys, LTI Mindtree, LTTS, NTT Data, Sopra Steria, and Tech Mahindra

- Major Contenders are aiming to educate enterprise customers on the concept of digital twin through thought leadership and CoEs
- Most Major Contenders have a strong portfolio of clients across all major geographies and fast-growing verticals such as manufacturing, energy and utilities, and automotive
- Some Major Contenders are aiming to differentiate self from peers by investing in vertical-specific digital twin solutions that will accelerate implementation for clients

Aspirants

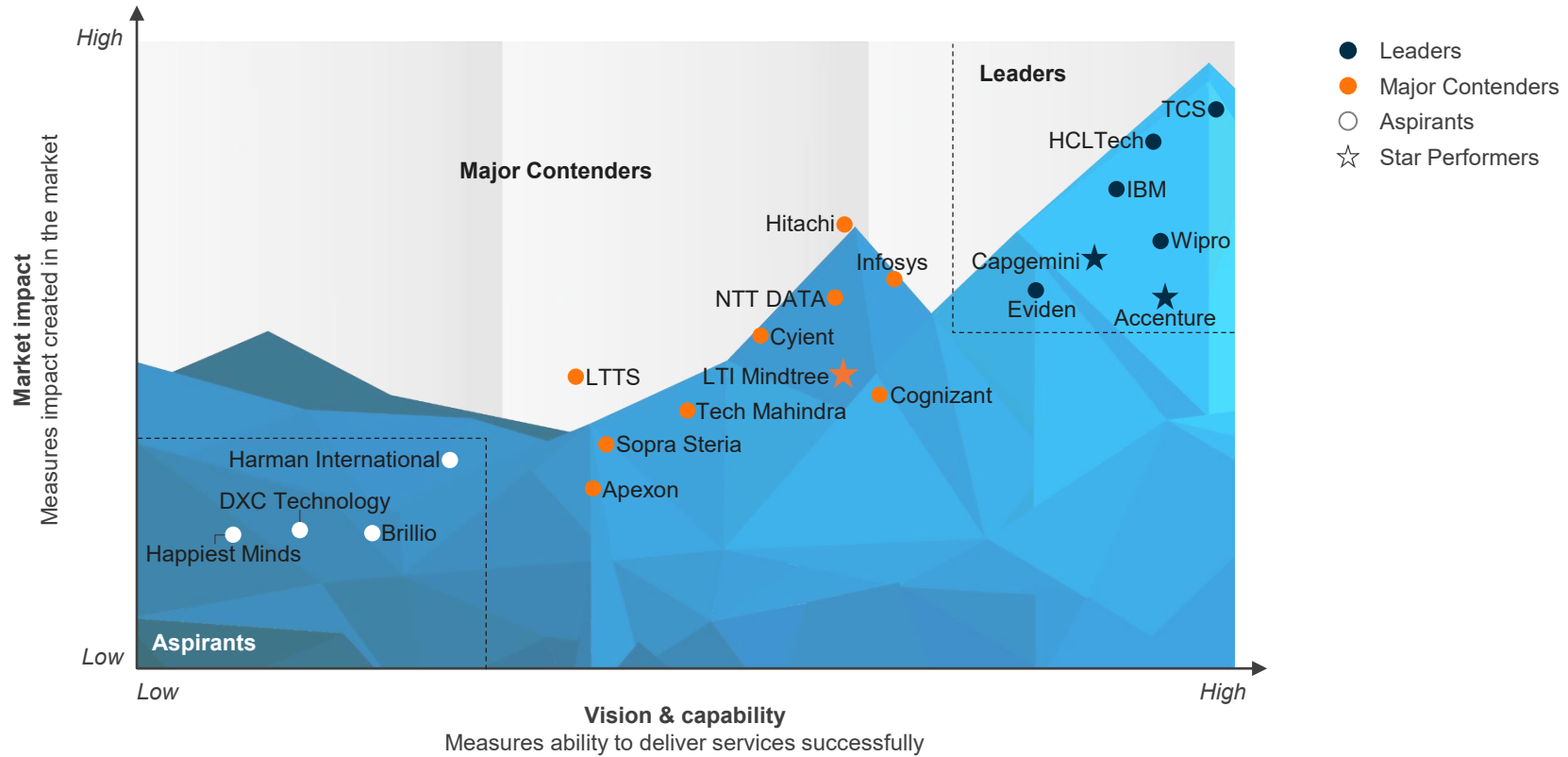Brillio, DXC Technology, Happiest Minds, and Harman International

- Aspirants are at a relatively nascent stage in their digital twin offerings and exhibit limited focus on investing in digital twin-specific solutions
- Aspirants are currently focusing on one or two service functions across the digital twin value chain

Everest Group PEAK Matrix®
Digital Twin Services PEAK Matrix® Assessment 2023 | TCS is positioned as a Leader

Everest Group Digital Twin Services PEAK Matrix® Assessment 2023[1]

1   Analysis for Brillio, Cognizant, DXC Technology, Eviden, Happiest Minds, Harman International, Hitachi, Infosys, LTTS, NTT DATA, and Sopra Steria excludes service provider inputs on this study and is based on Everest Group's estimates that leverage its proprietary Transaction Intelligence (TI) database, ongoing coverage of the service provider, and public disclosures

Confidentiality: Everest Group takes its confidentiality pledge very seriously. Any information that is contract-specific will be presented back to the industry only in an aggregated fashion
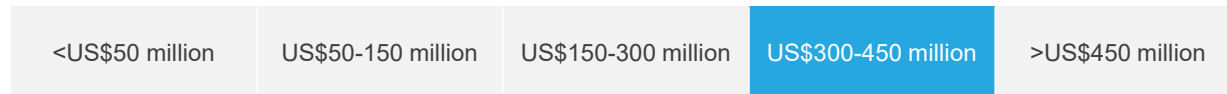
Source: Everest Group (2023)

TCS profile (page 1 of 5)
Overview

Company mission/vision statement for digital twin services

TCS envisions the integration of digital twins with AI to drive meaningful business transformations. The focus is on enhancing product capability maturity and delivering practical solutions for business transformation. TCS aims to expand its reach through strategic partnerships across various industries and domains. The company is committed to leveraging digital twins and AI for digital transformation, meeting evolving client requirements. TCS TwinX utilizes an enterprise digital twin framework that encompasses key operational elements such as customers, products, processes, resources, assets, suppliers, and facilities. This framework enables enterprises to model their operations and achieve optimization based on defined goals. TCS InTwin solution uses the capabilities of AI to empower organizations in their digital transformation journey. TCS IP2 solution leverages the power of AI, IoT, and digital twin technologies to utilize the performance optimization of power plants.
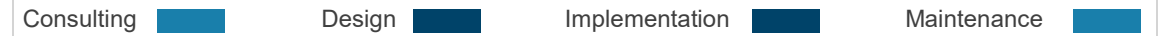
Digital twin services revenue

<US$50 million	US$50-150 million	US$150-300 million	US$300-450 million	>US$450 million

Legend: Low (<10%) | Medium (10-25%) | High (>25%)

Revenue by function

Consulting	Design	Implementation	Maintenance

Revenue by buyer size[1]

Small (annual revenue <US$1 billion)	Midsize (annual revenue US$1-5 billion)	Large (annual revenue >US$5 billion)

Adoption by industry[1]

Built environment, infrastructure, and facilities	Electronics, hi-tech, and technology	Healthcare, pharma and life sciences
Automotive	BFSI	Energy and utilities
Heavy industry[2]	Retail and CPG	Transport and logistics

Revenue by geography[1]

North America	Europe	United Kingdom
Asia Pacific	Middle East & Africa	South America

Revenue by scale of digital twin implemented[1]

Asset twin	System twin	Process twin

1 All the revenue components add up to a total of 100%
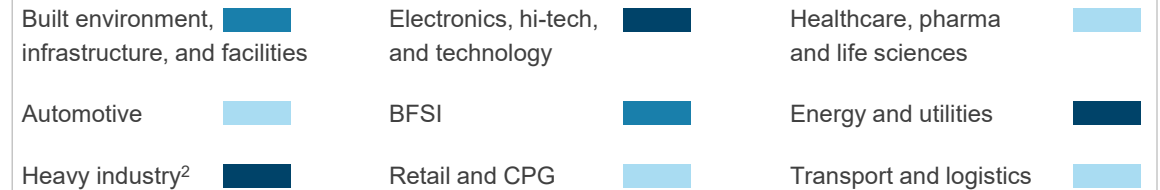2 Heavy industry includes the likes of aerospace, heavy machinery, etc.

TCS profile (page 2 of 5)
Case studies

Case study 1	Process optimization using digital twins for a steel plant

Business challenge

The client faced multiple challenges including reduced yield due to inconsistent raw material quality and corresponding dependency on time-consuming lab tests to adjust the process for the variations. Such variations heavily impacted the process as well as damaged the equipment. The client wanted a comprehensive approach to identify root causes and implement targeted mitigation strategies. The client aimed to mitigate the negative impact of variations, optimize plant performance, and enhance the overall operational excellence.

Solution

TCS focused on leveraging digital twins to enhance plant operations and achieve optimization at the plant level. The company implemented a real-time, physics-based product quality sensor to predict process quality parameters. It integrated its model with ML models and used it to optimize for throughput maximization and improve product quality.

Impact

- Reduced carbon footprint and achieved 2% reduction in fuel cost
- Increased productivity by 5%
- Improved quality of the process

Case study 2	Reduced process cycle time using digital twins

Business challenge

The client, a manufacturer of photolithographic systems, faced challenges with its testing and calibration process as it used to take a major chunk of the overall project time. It required to optimize the current overall build time and accommodate for more complex production processes leveraging the latest technologies.

Solution

TCS had undertaken the task of developing digital twins for the customer's machines using its InTwin platform. The project involved understanding current practices, data preprocessing, AI model development, evaluation, optimization, and pilot implementation within an 18-week timeframe. To address the challenge of improving machine build time, KPIs such as scan uniformity, dose accuracy, and light intensity were analyzed, and correlations were established between customer quality complaints and disturbance/process/material notifications. Leveraging AI capabilities, datasets were prepared for precise root cause analysis. The model effectively reduced disturbance notices, predicted test outcomes, and significantly optimized test runs and cycle time. The solution is now set to expand its benefits to multiple machine models manufactured by the customer.

Impact

- Reduced cycle time by 11%
- Reduced cost of quality by 20%

TCS profile (page 3 of 5)
Solutions, partnerships, and investments

Proprietary solutions (representative list)	
Solution name	**Details**
TCS InTwin™	It is a solution that uses the capabilities of AI to empower organizations in their digital transformation journey.
TCS DMP: Digital Manufacturing Performance Management (DMPM)	It provides a solution that integrates data-driven insights, AI-enabled capabilities, and a flexible architecture that runs its digital transformation initiatives and elevates manufacturing processes to new levels of excellence.
TCS IP2™	It is a digital solution that leverages the power of AI, IoT, and digital twin technologies to utilize the performance optimization of power plants. It is also deployed on either cloud or on-premise infrastructure and can also be extended to incorporate renewable energy sources such as wind, solar, and grid-scale batteries.
TCS TwinX™ – CJOps	It is a solution to optimize customer satisfaction, maximize Customer Lifetime Value (CLV), and enhance the overall customer experience at every stage of its journey.
TCS TwinX™ – G2Max	It focuses on driving revenue growth by utilizing contextual products and offers, precisely targeting specific customer segments. Also, assists in establishing a business experimentation framework, collecting data-driven insights, and continuously refining its approach for optimal outcomes.
TCS TwinX™ – FRCMaX	It is an advanced technologies, data analytics, and a multi-layered security approach that enhances the ability to detect and prevent fraud, protecting both the organization and its customers.
TCS TwinX™ – Supplx	It aims to optimize the supply chain network, enabling business to gain a competitive edge in crucial areas such as lead time, cost, efficiency, and inventory management.
TCS Connected Universe Platform	TCS Connected Universe Platform is an industrial IoT platform. It accelerates digital transformation by helping enterprises connect to diverse devices and machines, collecting and integrating IoT data, and providing advanced analytics using AI-ML technology. The platform enables digital twins across various domains such as manufacturing, utilities, logistics, and transportation.

Partnerships (representative list)	
Partner name	**Details**
Google	Partnered with Google to develop digital twin-based solutions such as Looker, BigQuery, Fusion, and Routing APIs.
Microsoft	Partnered with Microsoft, an American multinational technology corporation, to develop digital twin-based solutions.
PTC	Partnered with PTC for digital manufacturing architecture with faster time to result and proof points.
AWS	Partnered with AWS, a subsidiary of Amazon that provides on-demand cloud computing platforms to develop digital twin-based solutions.

TCS profile (page 4 of 5)
Solutions, partnerships, and investments

Other investments (representative list)	
Investment name	**Details**
Digital Twin CoE	Invested in a Digital Twin CoE to develop comprehensive implementation plans that ensure twin capability is realized in the most optimal and effective manner.
Innovation centers	Invested in innovation labs to explore the concept of digital twin and participate in hands-on experiences, enabling clients to unlock the full potential of embracing this technology.
Talent development	Invested in a talent development program tailored for domain experts and SMEs in collaboration with premier institutions. It offers M.Tech. in industrial AI program to address the unique challenges faced by industrial clients through user-oriented programs, with a specific focus on meeting the requirements of TCS.
Initiative	• Scale AI: Invested in expertise for scaling solutions using cloud services/platforms for digital twin, AI, and ML services • Computer Science Business Systems (CSBS): It an industry-oriented four-year undergraduate program called the CSBS and designed to equip students with the necessary skills and knowledge to excel in the digital era, specifically focusing on digital twin projects

TCS profile (page 5 of 5)
Everest Group assessment – Leader

Measure of capability: ◔ Low ● High

Market impact				Vision & capability				
Market adoption	Portfolio mix	Value delivered	Overall	Vision and strategy	Scope of services offered	Innovation and investments	Delivery footprint	Overall
◕	◕	●	●	●	◔	◕	◕	◕

Strengths

- TCS excels as a technology transformation partner, leveraging digital twins and AI for impactful business outcomes

- Its domain expertise is highly valued by clients due to its familiarity with diverse business problems and technical aspects

- TCS' strategic partnerships with digital twin specialists enables it to scale client engagements effectively

Limitations

- Clients expect TCS to improve its change management capabilities to ensure solutions are utilized effectively at the client's end

- Clients anticipate better thought leadership and market-oriented events from TCS to effectively educate businesses on the advantages and applications of its digital twin offerings

- It caters primarily to large-sized clients; small-sized clients may not find its solutions to be the most cost-effective or suitable for their needs

Appendix

Everest Group PEAK Matrix® is a proprietary framework for assessment of market impact and vision & capability

Everest Group PEAK Matrix
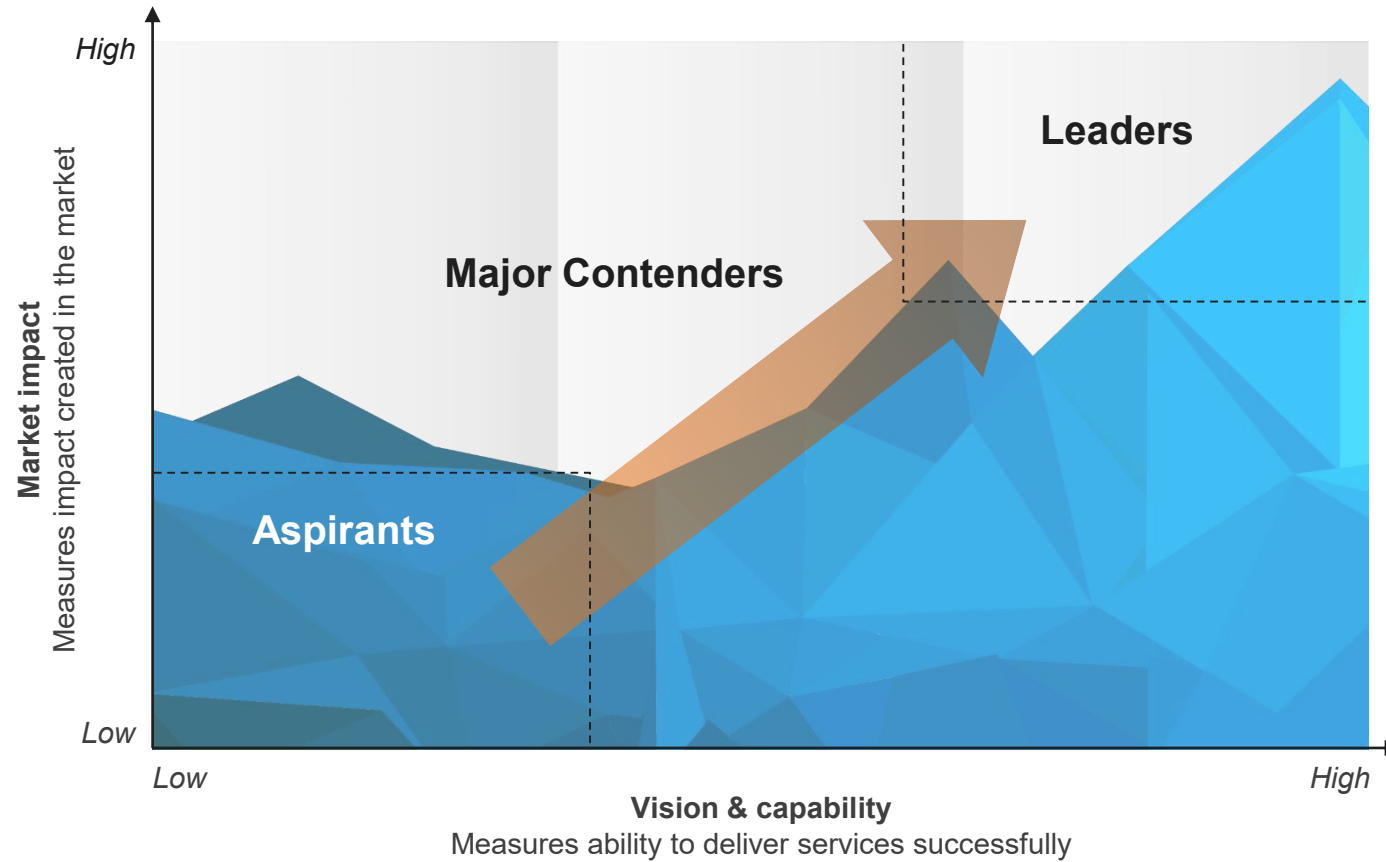
Services PEAK Matrix® evaluation dimensions

Measures impact created in the market –
captured through three subdimensions

Market adoption

Number of clients, revenue base,
YoY growth, and deal value/volume

Portfolio mix

Diversity of client/revenue base across
geographies and type of engagements

Value delivered

Value delivered to the client based
on customer feedback and
transformational impact

Market impact

Leaders

Major Contenders

Aspirants

Vision & capability
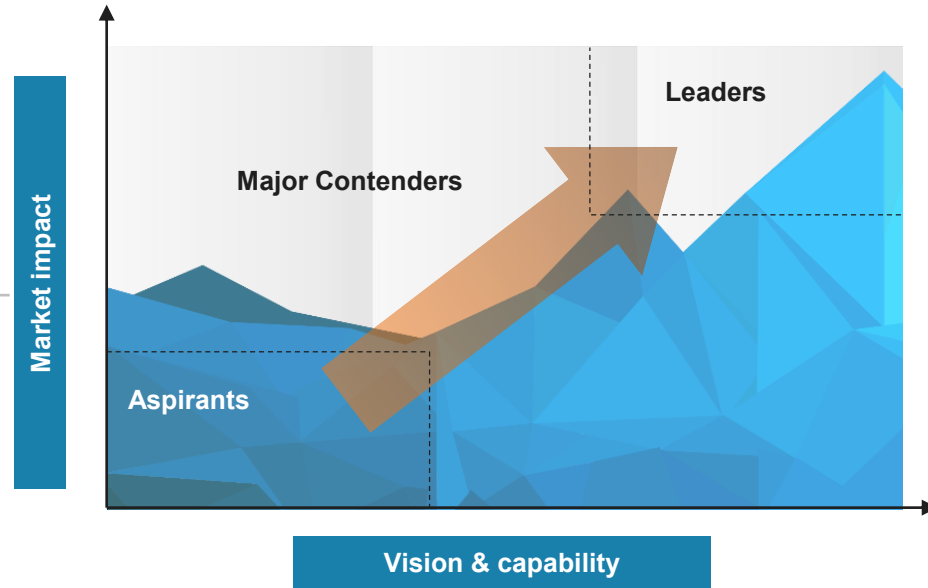
Measures ability to deliver services successfully.
This is captured through four subdimensions

Vision and strategy

Vision for the client and itself; future
roadmap and strategy

Scope of services offered

Depth and breadth of services portfolio
across service subsegments/processes

Innovation and investments

Innovation and investment in the enabling
areas, e.g., technology IP, industry/domain
knowledge, innovative commercial
constructs, alliances, M&A, etc.

Delivery footprint

Delivery footprint and global sourcing mix

Everest Group confers the Star Performers title on providers that demonstrate the most improvement over time on the PEAK Matrix®

Methodology

Everest Group selects Star Performers based on the relative YoY improvement on the PEAK Matrix

In order to assess advances on **market impact**, we evaluate each provider's performance across a number of parameters including:

- Yearly ACV/YoY revenue growth
- # of new contract signings and extensions
- Value of new contract signings
- Improvement in portfolio mix
- Improvement in value delivered

In order to assess advances on **vision and capability**, we evaluate each provider's performance across a number of parameters including:

- Innovation
- Increase in scope of services offered
- Expansion of delivery footprint
- Technology/domain specific investments

We identify the providers whose improvement ranks in the top quartile and award the Star Performer rating to those providers with:

- The maximum number of top-quartile performance improvements across all of the above parameters AND
- At least one area of top-quartile improvement performance in both market success and capability advancement

The Star Performers title relates to YoY performance for a given vendor and does not reflect the overall market leadership position, which is identified as Leader, Major Contender, or Aspirant.

FAQs

Does the PEAK Matrix® assessment incorporate any subjective criteria?
Everest Group's PEAK Matrix assessment takes an unbiased and fact-based approach that leverages provider / technology vendor RFIs and Everest Group's proprietary databases containing providers' deals and operational capability information. In addition, we validate/fine-tune these results based on our market experience, buyer interaction, and provider/vendor briefings.

Is being a Major Contender or Aspirant on the PEAK Matrix, an unfavorable outcome?
No. The PEAK Matrix highlights and positions only the best-in-class providers / technology vendors in a particular space. There are a number of providers from the broader universe that are assessed and do not make it to the PEAK Matrix at all. Therefore, being represented on the PEAK Matrix is itself a favorable recognition.

What other aspects of the PEAK Matrix assessment are relevant to buyers and providers other than the PEAK Matrix positioning?
A PEAK Matrix positioning is only one aspect of Everest Group's overall assessment. In addition to assigning a Leader, Major Contender, or Aspirant label, Everest Group highlights the distinctive capabilities and unique attributes of all the providers assessed on the PEAK Matrix. The detailed metric-level assessment and associated commentary are helpful for buyers in selecting providers/vendors for their specific requirements. They also help providers/vendors demonstrate their strengths in specific areas.

What are the incentives for buyers and providers to participate/provide input to PEAK Matrix research?
- Enterprise participants receive summary of key findings from the PEAK Matrix assessment
- For providers
  - The RFI process is a vital way to help us keep current on capabilities; it forms the basis for our database – without participation, it is difficult to effectively match capabilities to buyer inquiries
  - In addition, it helps the provider/vendor organization gain brand visibility through being in included in our research reports

What is the process for a provider / technology vendor to leverage its PEAK Matrix positioning?
- Providers/vendors can use their PEAK Matrix positioning or Star Performer rating in multiple ways including:
  - Issue a press release declaring positioning; see our citation policies
  - Purchase a customized PEAK Matrix profile for circulation with clients, prospects, etc. The package includes the profile as well as quotes from Everest Group analysts, which can be used in PR
  - Use PEAK Matrix badges for branding across communications (e-mail signatures, marketing brochures, credential packs, client presentations, etc.)
- The provider must obtain the requisite licensing and distribution rights for the above activities through an agreement with Everest Group; please contact your CD or contact us

Does the PEAK Matrix evaluation criteria change over a period of time?
PEAK Matrix assessments are designed to serve enterprises' current and future needs. Given the dynamic nature of the global services market and rampant disruption, the assessment criteria are realigned as and when needed to reflect the current market reality and to serve enterprises' future expectations.

Everest Group®

With you on the journey

Everest Group is a leading research firm helping business leaders make confident decisions. We guide clients through today's market challenges and strengthen their strategies by applying contextualized problem-solving to their unique situations. This drives maximized operational and financial performance and transformative experiences. Our deep expertise and tenacious research focused on technology, business processes, and engineering through the lenses of talent, sustainability, and sourcing delivers precise and action-oriented guidance. Find further details and in-depth content at **www.everestgrp.com**.

Stay connected

Dallas (Headquarters)
info@everestgrp.com
+1-214-451-3000

Bangalore
india@everestgrp.com
+91-80-61463500

Delhi
india@everestgrp.com
+91-124-496-1000

London
unitedkingdom@everestgrp.com
+44-207-129-1318

Toronto
canada@everestgrp.com
+1-214-451-3000

Website
everestgrp.com

Social Media
🐦 @EverestGroup
in @Everest Group
f @Everest Group
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Blog
everestgrp.com/blog