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Everest Group PEAK Matrix® for Verification and Validation (V&V) Engineering Service Providers 2020

Focus on HCL Technologies

March 2020

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Background of the research

- The integration of digital features across mechanical, embedded, network, and software spectrums is making products increasingly intelligent and interconnected. As a result, V&V requirements are evolving from merely ensuring functional and performance validation of these products to enhancing business brand value by ensuring seamless customer experience across channels

- Enterprises are having to constantly innovate to roll out products at an increasingly faster rate to meet evolving customer demands; while at the same time, ensuring compliance with stricter regulatory norms and policies

- As a result, enterprises are seeking ecosystem partners who can help in reducing the time-to-market without compromising on product quality, driving the growth of the V&V engineering services outsourcing market

- Service providers are catering to this demand by investing in skilled resources, physical infrastructure to enable them to validate complex products, and partnerships with third parties to leverage their tools and platforms across the V&V engineering value chain

- In this research, we present fact-based trends impacting the V&V engineering services market, along with the assessment and detailed profiles of 17 engineering service providers on their V&V capabilities across four service lines – mechanical, embedded, network, and software. Each service provider profile gives a comprehensive picture of their V&V engineering services vision, scale and scope of operations, key solutions, and partnerships

Scope of this report

- **Services:** Verification and Validation Engineering Services

- **Geography:** Global

- **Service providers:** 17 leading verification and validation engineering service providers

This report includes the profiles of the following 17 leading V&V engineering service providers featured on the V&V Engineering Services PEAK Matrix:

- **Leaders:** Capgemini, Cognizant, HCL Technologies, and Wipro

- **Major Contenders:** a1qa, Accenture, Cybage, Cyient, eInfochips, HARMAN Connected Services, Infosys, L&T Technology Services, Mphasis, TCS, and Tech Mahindra

- **Aspirants:** Happiest Minds and Semcon

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Introduction and scope

Everest Group recently released its report titled "Verification and Validation (V&V) Engineering Services PEAK Matrix® Assessment 2020: Enhancing Brand Assurance Through Intelligent and Integrated Quality Engineering". This report analyzes the changing dynamics of the V&V engineering services landscape and assesses service providers across several key dimensions.

As a part of this report, Everest Group updated its classification of 17 service providers on the Everest Group PEAK Matrix® for V&V engineering services into Leaders, Major Contenders, and Aspirants. The PEAK Matrix is a framework that provides an objective, data-driven, and comparative assessment of V&V engineering service providers based on their absolute market success and delivery capability. Everest Group also identified two service providers as the "2020 Verification and Validation Engineering Services Market Star Performers" based on the strongest forward movement demonstrated on the PEAK Matrix year-on-year.

Based on the analysis, **HCL Technologies emerged as a Leader.** This document focuses on **HCL Technologies'** V&V engineering services experience and capabilities HCL and includes:

- HCL Technologies' position on the V&V Engineering Services PEAK Matrix
- Detailed V&V Engineering Services profile of HCL Technologies

Buyers can use the PEAK Matrix to identify and evaluate different service providers. It helps them understand the service providers' relative strengths and gaps. However, it is also important to note that while the PEAK Matrix is a useful starting point, the results from the assessment may not be directly prescriptive for each buyer. Buyers will have to consider their unique situation and requirements, and match them against service provider capability for an ideal fit.

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V&V engineering services PEAK Matrix® characteristics

Leaders:

Capgemini, Cognizant, HCL Technologies, and Wipro

- The Leaders segment comprises broad-based IT-heritage firms that have identified V&V as an essential component of their portfolio, with V&V revenues accounting for more than 25% of the engineering services revenue for each of these players
- Service providers in the Leaders segment have been at the forefront of the V&V landscape in terms of leveraging emerging technologies to develop tools, frameworks, and solutions to accelerate V&V processes
- Leaders' investments in labs, CoEs, and other physical infrastructure facilities enable them to cater to customers from across service functions, while their strong partnership networks equip them to provide end-to-end V&V services

Major Contenders:

a1qa, Accenture, Cybage, Cyient, eInfochips, HARMAN Connected Services, Infosys, L&T Technology Services, Mphasis, TCS, and Tech Mahindra
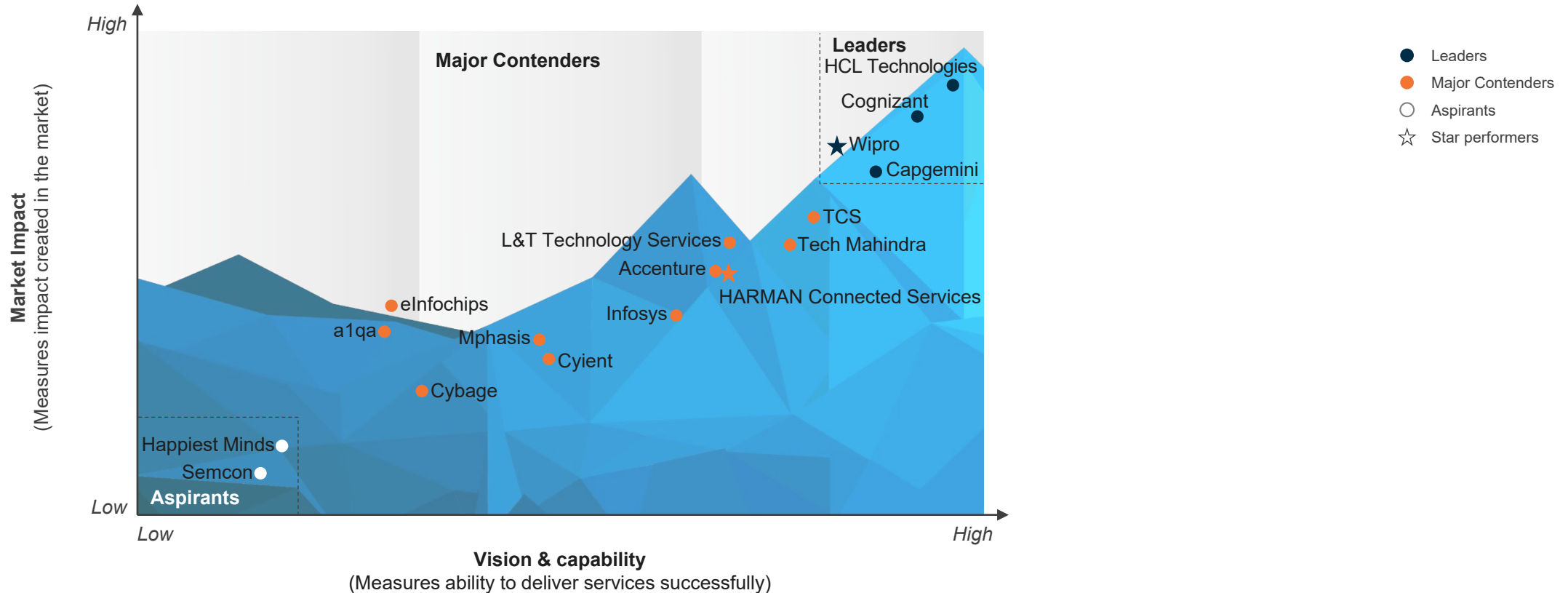
- Major Contenders comprise a mix of broad-based IT-heritage firms, pure-play engineering service providers, as well as players who have a dedicated focus on V&V engineering services
- Service providers in the Major Contenders segment have a strong focus toward making V&V more efficient, and are leveraging test automation tools to that end
- While Major Contenders have made significant investments to enhance their domain expertise and delivery capabilities, they lag behind Leaders in terms of having a holistic portfolio of solutions and offerings (presence across service lines and industries)

Aspirants:

Happiest Minds and Semcon

- Aspirants have carved out a niche for themselves, either by having a geographic- or an industry-focused approach towards V&V, and have a strong presence in their chosen focus areas among small and mid-sized engineering enterprises
- Aspirants need to proactively invest in their V&V engineering services portfolio and build capabilities and domain expertise to become quick-recall V&V brands in the market

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Everest Group PEAK Matrix®

V&V Engineering Services PEAK Matrix® Assessment 2020 | HCL Technologies positioned as Leader

Everest Group Verification and Validation (V&V) Engineering Services PEAK Matrix® Assessment 2020

Vision & strategy: HCL accelerates time-to-market for customers by bringing in automation and leveraging its lab infrastructure, IPs, and frameworks. HCL aims to leverage the latest technology advances including AI and analytics to accelerate product testing life cycle across domains. In line with customer demands, HCL helps companies improve reliability and security of their products to drive improved customer experience.

Summary of PEAK Matrix assessment

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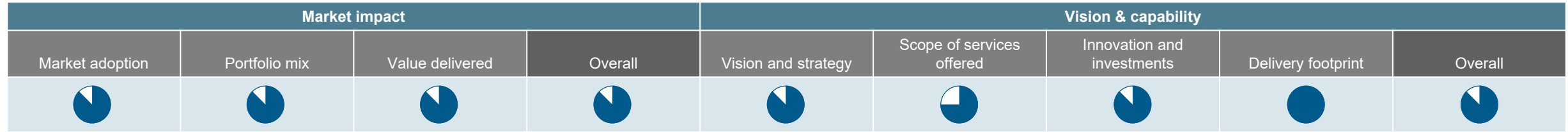
Strengths

- HCL's investments in setting up physical infrastructure (labs, CoEs, etc.) allow it to cater to customers from multiple industries across service functions
- HCL has a strong global presence; as a result of which, it can serve customers from onshore, nearshore, and offshore locations depending upon their requirements
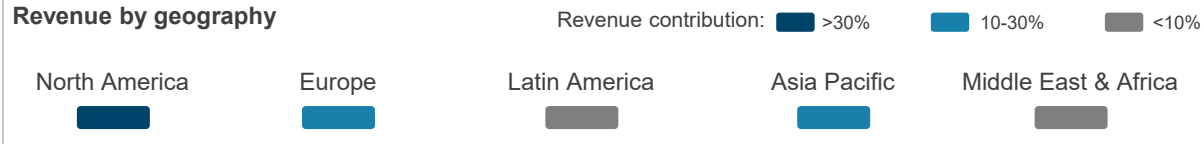
Areas of improvement

- HCL can leverage the vastness of its organization and interact with other teams to cross-leverage innovative solutions that they may have developed
- Clients believe that the thought leaderships / whitepapers that HCL comes up with need to be more mature offerings and can be tailored to suit client-specific requirements
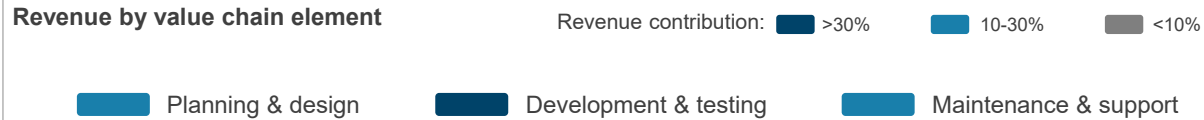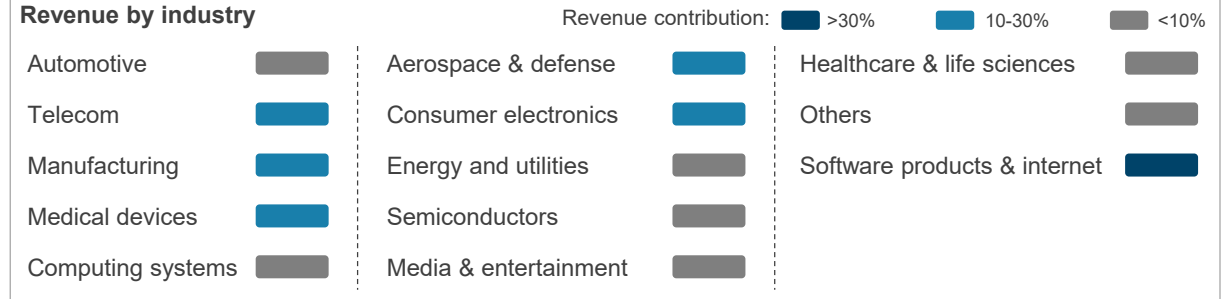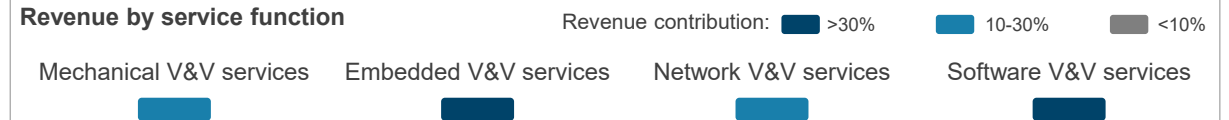
V&V engineering services revenue

<US$100 million	US$100-US$200 million	US$200 million-US$500 million	**>US$500 million**

Revenue by geography   Revenue contribution: >30%   10-30%   <10%

North America	Europe	Latin America	Asia Pacific	Middle East & Africa

Revenue by industry   Revenue contribution: >30%   10-30%   <10%

Automotive	—	Aerospace & defense	—	Healthcare & life sciences	—
Telecom	—	Consumer electronics	—	Others	—
Manufacturing	—	Energy and utilities	—	Software products & internet	—
Medical devices	—	Semiconductors	—		
Computing systems	—	Media & entertainment	—		

Revenue by value chain element   Revenue contribution: >30%   10-30%   <10%

- Planning & design
- Development & testing
- Maintenance & support

Revenue by service function   Revenue contribution: >30%   10-30%   <10%

Mechanical V&V services	Embedded V&V services	Network V&V services	Software V&V services

Source: Everest Group (2020)

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Case studies and solutions

Case study 1	
Time-to-market reduction through automation for a leading medical devices player	
Business challenge	The client wanted verification support for product development and launch of multiple products across different geographies
Solution and impact	HCL took the complete ownership of end-to-end testing of client's products, used automation to cover the workflow and system files comparison, and participated in testing of numerous products. The client was able to achieve faster time-to-market and an improved quality for its products

Case study 2	
Accessibility testing for a leading software and consumer electronics company	
Business challenge	The client was looking for support on accessibility compliance of its large portfolio of products within a limited time-frame
Solution and impact	HCL performed accessibility testing on multiple products around cloud, database, and enterprise products through a dedicated in-house group. HCL also provided remediation support with managed mode execution and used its in-house devices lab and platforms for testing. HCL ensured 100% compliance for all the products and also undertook cost optimization initiatives

Proprietary solutions (representative list)

Solution	Details
Accelerated Functional Testing (AFT)	A suite of offerings around end-to-end automation, device & application testing, platform-agnostic automation, high cost test infrastructure, remote testing, and process overheads elimination using tool-driven execution
Framework for Accelerated Avionics System Testing (FAAST)	A framework for facilitation of complete hardware and software system testing, including black box testing
HCL Optimus	An analytics-driven automation solutions platform targeted to transform product testing and sustenance lifecycle through end-to-end automation. It aims to provide faster GTM, lower development costs, quicker deployments, and higher quality
Integrated Lifecycle Management (iLCM)	A service delivery platform that integrates people, processes, tools, and technology across product lifecycle to address operational gaps and inefficiencies
Platform Acceleration Suite (PAS)	An acceleration suite that brings together packaged application frameworks, reusable software components, automation tools for testers and developers, support for multiple architectural patterns, and best practice templates to provide accelerated development of software and platforms

Source: Everest Group (2020)

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Investments and partnerships

Key alliances and partnerships (representative list)	
Partner name	**Details**
ETAS	Partnership in the areas of model-based development, AUTOSAR, and cybersecurity. HCL uses ETAS Labcar hardware and software to create Hardware In Loop (HIL) models and automated testing
IBM	IP partnership, spanning 15+ years, that enables HCL to quickly roll out automation, continuous testing, and DevOps solutions and offer alternate commercial models for its customers for cost reduction
MicroFocus	Strategic partnership spanning 15+ years around multiple areas, primarily NexGen automation solution, SmartGen for performance testing, mobile testing, and security testing utilities
National Technical Systems, Inc.	Strategic partnership with focus on mechanical components, mainly functional, operational, and environmental testing
Texas Instruments	Platinum member of elite design house network to build product components and solution accelerators for three major segments – aerospace, medical electronics, and consumer electronics
Tricentis	Partnership that involves a dedicated service line for Tosca to render advanced automated testing, aimed at helping clients achieve enterprise-wide test automation with a high return
Xilinx	Alliance program certified member, which is an ecosystem collaboration to help mutual customers develop their products faster and with confidence on targeted design platforms. The partnership also involves offerings around configurable backhaul modems, targeting 5G access and mobile backhaul markets that enables telecom OEMs to meet stringent requirements of next-generation networks

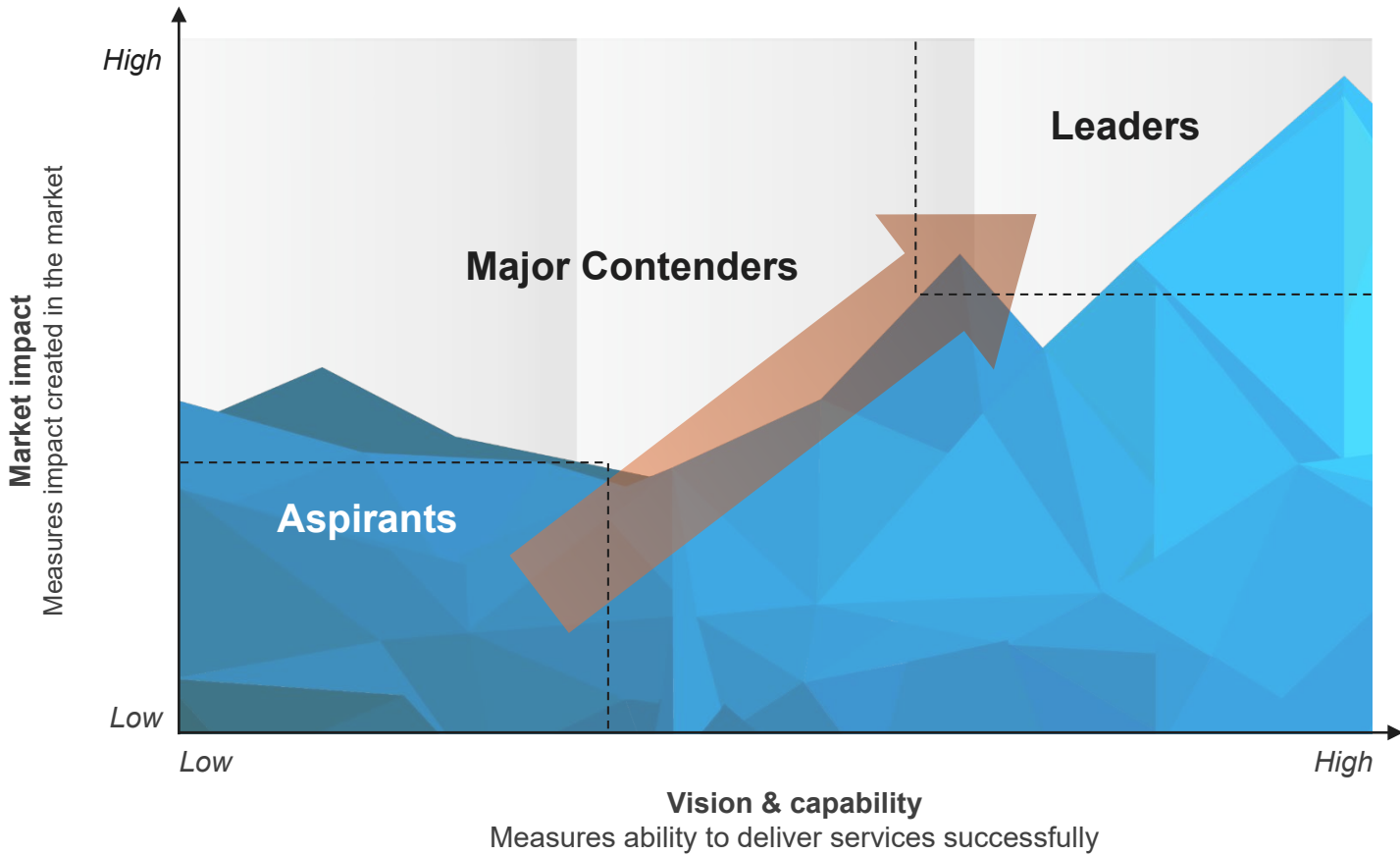| Recent verification and validation engineering investments (representative list)	
Investment name	**Details**
Acquisitions	Acquired Sankalp Semiconductors, Geometric, Butler America Aerospace, Concept to Silicon Systems, and Volvo IT to enhance testing capabilities and offerings, while also expanding GTM reach for customers
Investment in patents, IPs and solutions	Invested in 1,500+ patents and solutions, such as developing and patenting eDAT solution, which enables test automation using black box approach through hardware and software interface accelerators, reduces time-to-market, improves ROI and test coverage, and reduces defect leakage
Investments in labs	Invested in mechanical testing lab for testing of small to medium mechanical components including high lift components, valves, actuators, etc. Also invested in environmental testing for DO160 standard, tear-down lab & value engineering for physical verification of parts after testing, accessibility testing lab, security testing lab & certification, usability testing lab, and more
Cognitive automation	Conducted investments in AI-/ML-based cognitive automation solutions to reduce time-to-market with special focus on product testing
Investments in specialized themes	Conducted investments in specialized testing areas such as cybersecurity, performance, accessibility, gaming, and network automation

Source: Everest Group (2020)

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Appendix

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

Everest Group PEAK Matrix®

Market impact
Measures impact created in the market

High

Low

Leaders

Major Contenders

Aspirants

Low

Vision & capability
Measures ability to deliver services successfully

High

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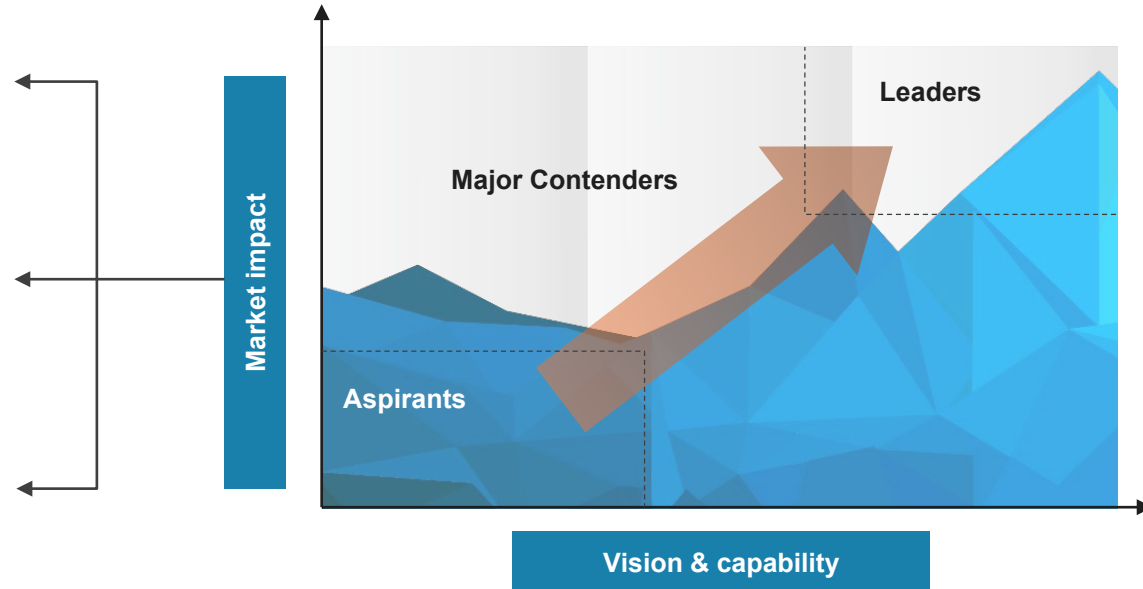
Measures ability to deliver services successfully. This is captured through four subdimensions

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, and M&A

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
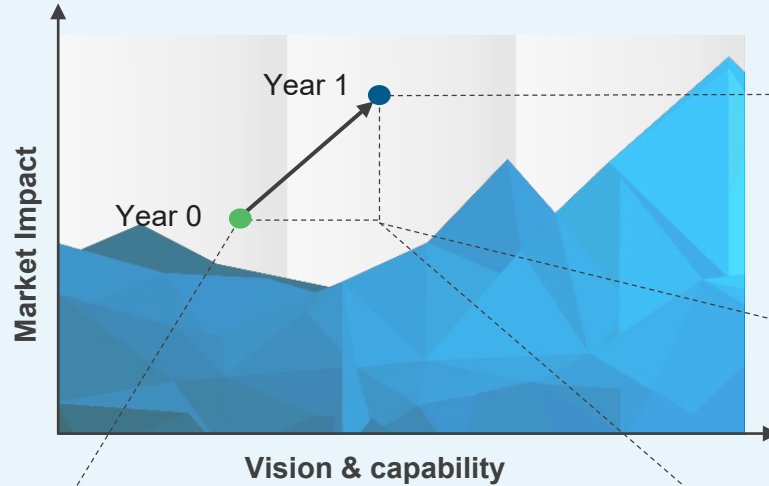
In order to assess advances on **market impact**, we evaluate each service provider's performance across a number of parameters including:
- Yearly ACV/YOY revenue growth
- # of new contract signings and extensions
- Value of new contract signings
- Improvement in portfolio mix
- Improvement in the value delivered

In order to assess advances on **vision and capability**, we evaluate each service 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 service providers whose improvement ranks in the top quartile and award the Star Performer rating to those service 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 in 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 adopts an unbiased and fact-based approach (leveraging service provider / technology vendor RFIs and Everest Group's proprietary databases containing providers' deals and operational capability information). In addition, these results are validated / fine-tuned 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 service 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 PEAK Matrix assessment are relevant to buyers and providers besides the "PEAK Matrix position"?

A PEAK Matrix position is only one aspect of Everest Group's overall assessment. In addition to assigning a "Leader", "Major Contender," or "Aspirant" title, Everest Group highlights the distinctive capabilities and unique attributes of all the PEAK Matrix providers assessed in its report. The detailed metric-level assessment and associated commentary is helpful for buyers in selecting particular providers/vendors for their specific requirements. It also helps providers/vendors showcase their strengths in specific areas

What are the incentives for buyers and providers to participate/provide input to PEAK Matrix research?

- Participation incentives for buyers include a summary of key findings from the PEAK Matrix assessment
- Participation incentives for providers/vendors include adequate representation and recognition of their capabilities/success in the market place, and a copy of their own "profile" that is published by Everest Group as part of the "compendium of PEAK Matrix providers" profiles

What is the process for a service provider / technology vendor to leverage their PEAK Matrix positioning and/or "Star Performer" status ?

- Providers/vendors can use their PEAK Matrix positioning or "Star Performer" rating in multiple ways including:
  – Issue a press release declaring their positioning. See citation policies
  – Customized PEAK Matrix profile for circulation (with clients, prospects, etc.)
  – Quotes from Everest Group analysts could be disseminated to the media
  – Leverage PEAK Matrix 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 the designated POC at Everest Group.

Does the PEAK Matrix evaluation criteria change over a period of time?

PEAK Matrix assessments are designed to serve present and future needs of the enterprises. 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 as well as serve the future expectations of enterprises

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About Everest Group

Everest Group is a consulting and research firm focused on strategic IT, business services, and sourcing. We are trusted advisors to senior executives of leading enterprises, providers, and investors. Our firm helps clients improve operational and financial performance through a hands-on process that supports them in making well-informed decisions that deliver high-impact results and achieve sustained value. Our insight and guidance empower clients to improve organizational efficiency, effectiveness, agility, and responsiveness. What sets Everest Group apart is the integration of deep sourcing knowledge, problem-solving skills and original research. Details and in-depth content are available at www.everestgrp.com.

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