



# HFS Top 10 Industry 4.0 Service Providers 2019 – Excerpt for Accenture

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**TOP 10**  
HFS

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“Industry 4.0 has enabled the entire manufacturing industry to shift from a solely mechanical engineering-oriented approach to a more holistic, dynamic, and intelligent software-defined journey. Enterprises are extending the scope of Industry 4.0 across the value chain and connecting different stakeholders and processes to reap the full benefit of Industry 4.0 solutions and services. In this context, the service providers have an important role to play, not only as technology enablers for manufacturers but also as important contributors to the supplier and customer ecosystems.”

—*Tapati Bandopadhyay, Research Vice President*

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# Introduction, methodology, and definitions

# Introduction

- “Industry 4.0” refers to the emerging impact of automation and data exchange in manufacturing technologies. It includes cyber-physical systems, the internet of things, cloud computing, and artificial intelligence. Industry 4.0 is commonly referred to as the fourth industrial revolution. Industry 4.0, when adopted effectively, increases manufacturing productivity, reduces costs, accelerates the go-to-market timeline, and facilitates mass personalization.
- *The HFS Top 10 Industry 4.0 Service Providers 2019* report examines the role that the service providers play in the evolving Industry 4.0 landscape. We assessed and rated the Industry 4.0 service capabilities of 21 service providers across a defined series of innovation, execution, and voice of the customer criteria. The report highlights the overall ratings for all 21 participants and the top five leaders for each sub-category.
- This report also includes detailed profiles of each service provider, outlining their overall and sub-category rankings, provider facts, and detailed strengths and development opportunities.
- The report focuses on Industry 4.0 specific capabilities across industries, as defined in our [Industry 4.0 value chain](#). It does not include horizontal IT and BPS services, PLM services, and enterprise services such as ERP implementation that may be delivered to Industry 4.0 clients.

# Service providers covered in this report

accenture > altran Atos Capgemini Cognizant Deloitte. DXC DXC.technology

EY FUJITSU HARMAN A SAMSUNG COMPANY HCL IBM Infosys KPMG

LTI Let's Solve L&T Technology Services Mindtree Welcome to possible NTT DATA tcs 50 Experience energy Tech Mahindra wipro

*\*Altran and Mindtree have been evaluated independent of their acquisition by Capgemini and L&T Group respectively*

# Research methodology

The *HFS Top 10 Industry 4.0 Service Providers 2019* report assessed and scored service provider participants across execution, innovation, and voice of the customer criteria. The inputs to this process were detailed RFIs we conducted with 21 service providers, 120 reference checks, briefings with leaders of Industry 4.0 services practices within service providers, and publicly available information sources. Specific assessment criteria and weighting include:



33.3%

## Ability to execute

- **Geographic spread and scale**—Includes Industry 4.0 revenue and growth (YoY), global delivery footprint, and delivery spread
- **Relationship management**—Single face to the customer, formal relationship and governance structure, and client portfolio and centrality
- **Depth and breadth of industry-specific offerings and expertise**—Including capabilities and revenue across the Industry 4.0 value chain, depth of industry knowledge, and level of sector experience
- **Depth of expertise across value chain**—Includes solutions coverage and maturity, integration among digital, business consulting, and Industry 4.0 practices



33.3%

## Innovation capability

- **Vision**—Including an integrated vision and credibility of strategy, proof-points of strong understanding of industry trends, refinement of capabilities to address industry-specific challenges
- **Ecosystem and investments**—Partnerships, thought leadership, acquisitions, R&D investments, and talent management
- **Tools and technology**—In-house tools, patents, lab infrastructure, process integration, and R&D outcomes
- **Pricing**—Co-development with clients, creative commercial models
- **Weaving with emerging technologies**—Deployment of intelligent automation, IT-OT convergence, 5G, and other emerging technologies

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33.3%

## Voice of the customer

- **Direct feedback from enterprise clients**—Via reference checks, surveys, and case studies critiquing provider performance and capabilities

# The Industry 4.0 value chain defined (1 of 2)

- The Industry 4.0 value chain demarcates the boundary of the people, processes, and technology to form the backbone of successful Industry 4.0 implementations for manufacturers. The HFS Industry 4.0 value chain describes interplays between the processes and functions in which manufacturing organizations engage. The Industry 4.0 value chain provides a comprehensive overview of services for both types of manufacturing activities across differences in business processes and landscapes of discrete and flow manufacturing.
- HFS has identified the necessary manufacturing business processes and major technologies shaping the Industry 4.0 landscape. As per our industry 4.0 definition, manufacturing leaders must focus on end-to-end processes starting from research and development (R&D) to product design, operations, and support services:
  - **Research and development**—New product development research including market needs, competitive landscape, and technology feasibility.
  - **Design**—Product design focused on physical product development; testing, cost, and quality measures; and regulatory compliance.
  - **Operations**—Focused on inbound and outbound logistics management and production processes. Operations functions include production planning, inventory management, transportation management, order processing, supply chain management, and aftermarket services.
  - **Support services**—Services designed to manage manufacturing organizations such as finance, resource management, and marketing.



# The Industry 4.0 value chain defined (2 of 2)

- Industry 4.0 is not a ready-made software suite like ERP; it includes a combination of complex manufacturing processes enabled by emerging technologies. We have identified smart manufacturing and other digital technologies that Industry 4.0 applications leverage. Some of these technologies are specific to Industry 4.0 applications, and others can be leveraged in this space.
  - **Industry 4.0 components**—These technologies are limited to manufacturing applications such as 3D printing, robotics, manufacturing automation, and small batch manufacturing.
  - **Generic technology components**—This group includes emerging digital technologies such as IoT, digital twin, AR/VR, and others that Industry 4.0 applications can use without too much customization for manufacturing applications.
- The necessity of a workforce with digital mindsets is crucial for the successful deployment of Industry 4.0 tenets. As the number of emerging technology components and their usage are increasing in manufacturing, enterprise must focus on building a smart workforce. Given the newness of Industry 4.0, the training and skill development of the existing workforce is a crucial aspect.

# Industry 4.0 value chain

Industry 4.0 Value Chain						
	R&D	Design	Operations			Support services
			Inbound	Production	Outbound	
<b>Activities value chain</b>	<ul style="list-style-type: none"> <li>Market research</li> <li>Basic research</li> <li>Technical feasibility</li> <li>Applied research</li> </ul>	<ul style="list-style-type: none"> <li>Feasibility study (cost, quality)</li> <li>Prototyping</li> <li>Testing</li> <li>Regulatory compliance</li> </ul>	<ul style="list-style-type: none"> <li>Demand planning</li> <li>Inventory management</li> <li>Procurement</li> <li>Transportation and logistics</li> </ul>	<ul style="list-style-type: none"> <li>Production planning and scheduling</li> <li>MRP I and II</li> <li>Manufacturing and IT support</li> <li>Quality control and waste management</li> </ul>	<ul style="list-style-type: none"> <li>Order processing and fulfilment</li> <li>Transportation and logistics</li> <li>Aftermarket services</li> <li>Sales and distribution</li> <li>Warehouse management</li> </ul>	<ul style="list-style-type: none"> <li>Finance</li> <li>Human resource management</li> <li>Marketing</li> </ul>
<b>Technology components value chain</b> (Scope: Enabling technologies for Industry 4.0)	<b>Industry 4.0 components</b>			<b>Generic technology components</b>		
	<ul style="list-style-type: none"> <li>Robotics</li> <li>Manufacturing Automation, IT support systems (SCADA, PLC, MES HMI, ERP)</li> <li>3D printing</li> <li>Small batch manufacturing</li> </ul>			<ul style="list-style-type: none"> <li>Big data</li> <li>Predictive analytics and AI applications (visual analytics, machine learning, computer vision, etc.)</li> <li>Internet of things (IoT)</li> <li>Digital twin or simulation</li> <li>Microservices, as-a-service model</li> <li>Cybersecurity</li> <li>Augmented reality (AR)</li> <li>Virtual reality (VR)</li> <li>Blockchain</li> <li>Drone</li> </ul>		
<b>Workforce</b>	Digital-ready workforce to enable and drive new operating models, innovative business models, and applications of new age technologies					

# Executive summary

- **Comprehensive study of 21 service providers serving the Industry 4.0 landscape:** The *HFS Top 10 Industry 4.0 Service Providers 2019* report is a study in which we rate 21 service providers across elements of service execution, innovation, and voice of the customer.
- **Data-based business insight is the need of the hour:** Industry 4.0 enables real-time data collection of manufacturing assets and processes. The analysis of this data is used for predictive maintenance, digital simulation, and other purposes. Though edge processing is deployed in some of the factory floor (mainly for dashboard monitoring), most of the data is pushed to the cloud for further analysis. This has helped enterprises in cost optimization, faster time-to-market, and manufacturing efficiency increments, etc. Enterprises are also trying to unlock valuable customer insights from connected customer data, enabling the launch of new business models in the future.
- **The Top 10 leaders in Industry 4.0 services are** Accenture, IBM, KPMG, Atos, Capgemini, HCL, EY, Infosys, Tech Mahindra, and Wipro. These firms exhibited a strong mix of service execution excellence, applied innovation and vision, and verified customer satisfaction to rise to the top of our Industry 4.0 study.
- **Service providers are following advisory-led and consulting-focused delivery approach for Industry 4.0 services:** Since Industry 4.0 is a very new concept, clients are often confused about its deployments. Some of the common concerns from the enterprises are: What is the technology boundary of Industry 4.0? What are the business cases we can start the experiments with? What are the business outcomes of the Industry 4.0 initiatives in the near, middle, and long term? Service providers are guiding clients to assess the business landscape and identifying opportunities with the maximum business benefits. They are also playing a vital role in selecting the necessary technology stacks (platforms, cloud, connectivity, etc.) for clients.

- **Industry 4.0 customers are very happy with their providers' flexibility:** Reference clients interviewed for this study rated flexibility as the area in which they are most satisfied with their service providers. Flexible headcount, pricing models, and good relationships with stakeholders are the key factors for this.
- **Industry 4.0 customers are least satisfied with their providers' intelligent automation capabilities:** Clients have mentioned that service providers need to improve their intelligent automation capabilities. Enterprises are looking for intelligent automation systems with seamless integration of manufacturing processes. Because Industry 4.0 facilitates mass personalization, service providers need thorough domain understanding to implement intelligent automation workflow for mass personalization in manufacturing.
- **IoT is the most critical lever for Industry 4.0:** Though previously manufacturing operations were also connected to a centralized location, insufficient data, latency, and lack of intelligent methods made it difficult to derive insights. With the advent of new age sensors, improved connectivity, and increased computing power, manufacturers can gather and analyze more information about their manufacturing activities. Thus IoT is the backbone for most of the other Industry 4.0 technologies applications.
- **The application of digital simulation is steadily increasing:** Digital simulation is becoming very popular as a part of design, development, testing, and validation purposes. As the regulations are becoming stricter (design specification, safety aspects, etc.) and the go-to-market time is decreasing, digital simulation will act as a catalyst for the enterprises.
- **North America remains the largest client base:** Though Europe and Asia Pacific have a significant number of clients in Industry 4.0 services, North America remains the biggest market for the service providers. Most of the Industry 4.0 engagements are in discrete manufacturing domain, and we have also observed several good case studies in the process manufacturing domain.

# The HFS Top 10 Industry 4.0 service providers results

# HFS top five Industry 4.0 service providers by individual assessment criteria

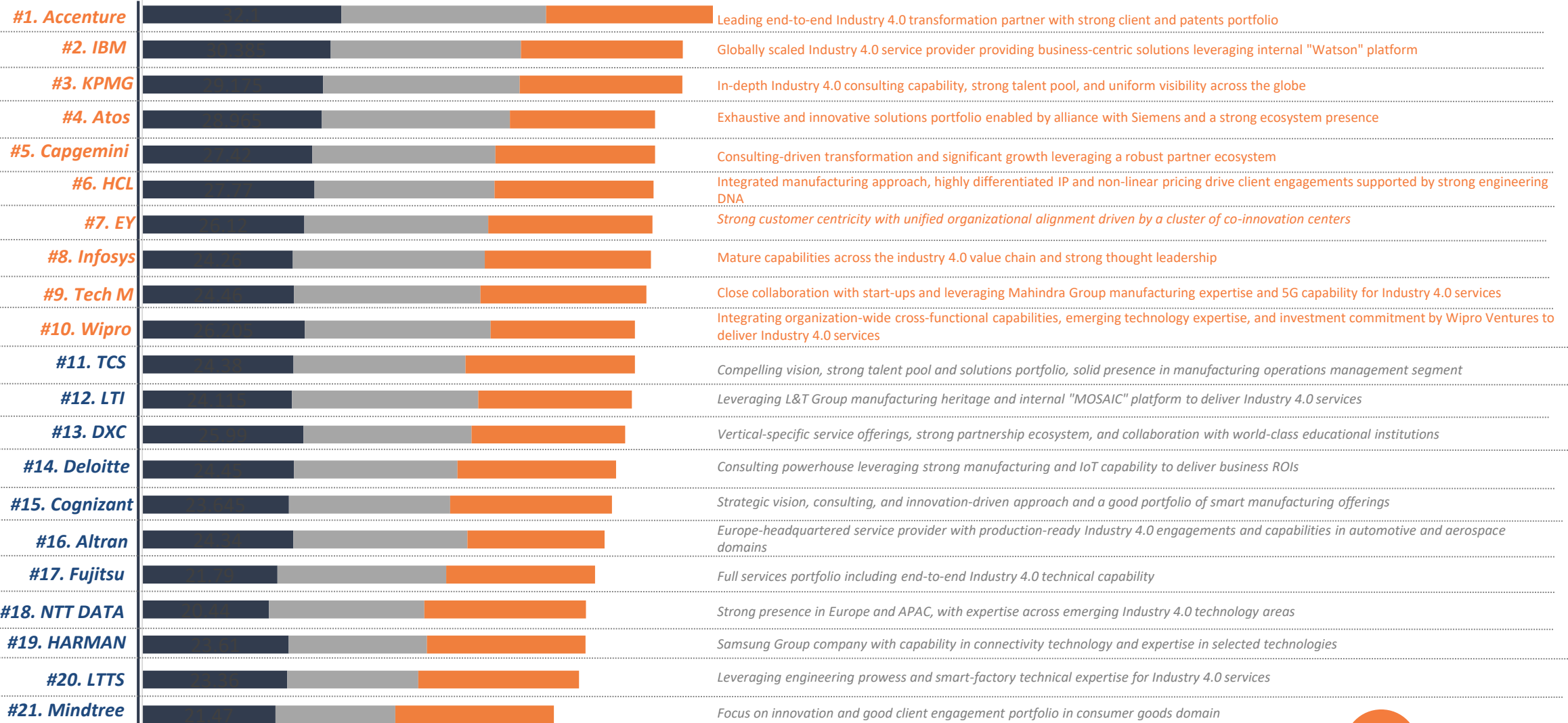
HFS ranking	Ability to execute				Innovation capability					Voice of the customer
	Geographic spread and scale	Relationship management	Industry presence	Depth of value chain	Vision	Ecosystem and investments	Tools and technology	Pricing	Weaving with emerging technologies	
#1	accenture	accenture	accenture	IBM	accenture	accenture	accenture	accenture	accenture	TATA CONSULTANCY SERVICES
#2	KPMG	IBM	Atos	accenture	KPMG	IBM	KPMG	HCL	KPMG	accenture
#3	IBM	KPMG	IBM	Atos	LTI Let's Solve	Infosys® Navigate your next	Infosys® Navigate your next	KPMG	Atos	Infosys® Navigate your next
#4	Capgemini	Atos	HCL	KPMG	Infosys® Navigate your next	KPMG	IBM	Tech Mahindra	Infosys® Navigate your next	Tech Mahindra
#5	HCL	EY Building a better working world	KPMG	Capgemini	EY Building a better working world	Atos	Atos	wipro	IBM	EY Building a better working world

Source: HFS Research 2019

# HFS Top 10 Industry 4.0 service providers 2019

■ Execution ■ Innovation ■ Voice of customer

HFS Top 10



- Altran and Mindtree have been evaluated independent of their acquisition by Capgemini and L&T Group respectively
- IBM, Wipro, Deloitte, Fujitsu and DXC have been evaluated as per our own research



# Industry 4.0 services activity value chain heatmap

	R&D	Design	Operations	Support services
Accenture	Dark Blue	Dark Blue	Dark Blue	Dark Blue
Altran	Dark Blue	Dark Blue	Medium Blue	Light Blue
Atos	Light Blue	Dark Blue	Dark Blue	Light Blue
Cognizant	Dark Blue	Dark Blue	Dark Blue	Dark Blue
EY	Dark Blue	Dark Blue	Dark Blue	Dark Blue
HARMAN	Light Blue	Dark Blue	Medium Blue	Light Blue
HCL	Light Blue	Dark Blue	Dark Blue	Light Blue
Infosys	Dark Blue	Dark Blue	Dark Blue	Dark Blue
KPMG	Dark Blue	Dark Blue	Medium Blue	Dark Blue
LTI	Light Blue	Light Blue	Dark Blue	Light Blue
LTTS	Light Blue	Dark Blue	Dark Blue	Light Blue
Mindtree	Dark Blue	Dark Blue	Medium Blue	Dark Blue
NTT DATA	Dark Blue	Dark Blue	Dark Blue	Dark Blue
TCS	Dark Blue	Dark Blue	Dark Blue	Dark Blue
Tech M	Light Blue	Dark Blue	Dark Blue	Dark Blue

- We asked service providers to demonstrate their capabilities across the Industry 4.0 activity value chain.
- We then asked service providers to rate their Industry 4.0-specific offerings on a maturity scale.
- Design and operations are the most mature segments of Industry 4.0 offerings. Design includes feasibility study, prototyping, testing, and regulatory compliance; whereas operations include demand planning, inventory management, production planning and scheduling, sales and distribution, aftermarket services, and transportation and logistics.
- Support services is the least mature segment of offerings. This segment includes services such as finance, human resource management, and marketing.
- Please refer to our [Industry 4.0 value chain](#) for more detail



# Industry 4.0 enabling technology (core Industry 4.0 components) heatmap

	Robotics	Manufacturing automation, IT support systems (SCADA, PLC, MES HMI, ERP)	3D printing	Small batch manufacturing
Accenture	Emerging	Emerging	Emerging	Emerging
Altran	Emerging	Emerging	Emerging	Emerging
Atos	Emerging	Emerging	Emerging	Emerging
Cognizant	Emerging	Emerging	Emerging	Emerging
EY	Emerging	Emerging	Emerging	Emerging
HARMAN	Emerging	Emerging	Emerging	Emerging
HCL	Emerging	Emerging	Emerging	Emerging
Infosys	Emerging	Emerging	Emerging	Emerging
KPMG	Emerging	Emerging	Emerging	Emerging
LTI	Emerging	Emerging	Emerging	Emerging
LTTS	Emerging	Emerging	Emerging	Emerging
Mindtree	Emerging	Emerging	Emerging	Emerging
NTT DATA	Emerging	Emerging	Emerging	Emerging
TCS	Emerging	Emerging	Emerging	Emerging
Tech M	Emerging	Emerging	Emerging	Emerging



- We asked service providers to demonstrate their capabilities across the Industry 4.0 enabling technologies (core Industry 4.0 components).
- We then asked service providers to rate their Industry 4.0 technology-specific capabilities on a maturity scale.
- Manufacturing automation, IT support systems is the most mature segment among core Industry 4.0 enabling technologies. This segment includes SCADA, PLC, MES, HMI, and ERP. Most of the technology components in this segment have been available for decades, so the segment is considered mature.
- 3D printing is the least mature segment among core Industry 4.0 enabling technologies. 3D printing is used for low volume manufacturing for specific use-cases, thus service providers are developing point solutions in 3D printing. As the adoption of 3D printing will increase, the maturity will also increase in this segment.
- Please refer to our [Industry 4.0 value chain](#) for more detail.

# Industry 4.0 enabling technology (generic technology components) heatmap

	Big data	Predictive analytics and AI applications	Internet of things (IoT)	Digital twin or simulation	Microservices, as-a-service model	Cyber-security	Augmented reality (AR)	Virtual reality (VR)	Blockchain	Drone
Accenture										
Altran										
Atos										
Cognizant										
EY										
HARMAN										
HCL										
Infosys										
KPMG										
LTI										
LTTS										
Mindtree										
NTT DATA										
TCS										
Tech M										

- We asked service providers to demonstrate their capabilities across the Industry 4.0 enabling technologies (generic technology components).
- We then asked service providers to rate their Industry 4.0 technology-specific capabilities on a maturity scale.
- Predictive analytics and AI applications, big data, and IoT are the most mature segments among generic Industry 4.0-enabling technologies. IoT provides the real-time data flow and data analysis methods used for deriving business insights.
- Drone is the least mature segment among generic Industry 4.0 enabling technologies. We have observed very limited drone applications due to regulatory requirements and some technology limitations. Drone applications are prevalent in asset condition assessments, inventory management, etc.
- Please refer to our [Industry 4.0 value chain](#) for more detail



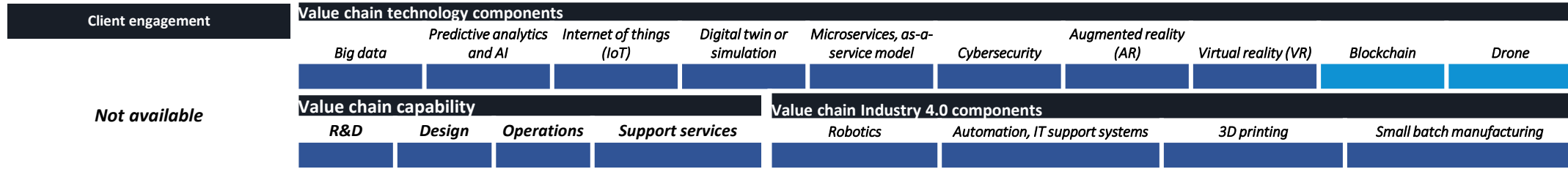
# Industry 4.0 service provider profile

Dimension	Rank
HFS Top 10 position	#1
<b>Ability to execute</b>	
Geographic spread and scale	#1
Relationship management	#1
Industry-specific offerings and expertise	#1
Depth of value chain	#2
<b>Innovation capability</b>	
Vision	#1
Investments and ecosystem	#1
Tools and technology	#1
Pricing	#1
Weaving with emerging technologies	#1
<b>Voice of the customer</b>	#2

Strengths	Development opportunities
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- **End-to-end smart manufacturing transformation partner.** Accenture positions its Industry X.0 practice as an amalgamation of four areas: Product X.0 (smart products and services), Engineering X.0 (engineering function for innovation), Service Ops X.0 (smart services for Product X.0), and Production and Supply Chain X.0 (multi-plant dynamic production and intelligent supply chain). It leverages strong consulting practice for Industry 4.0 engagements.
- **Scale of Industry 4.0 operations.** Accenture has the highest number of FTEs delivering Industry 4.0 services among the service providers evaluated for this study. It also has one of the largest client portfolios in this domain.
- **Geographic spread of business.** Accenture has a very balanced portfolio of clients in North America and Europe. Also, it earns a significant revenue percentage in the APAC region and has good delivery presence in the APAC countries.
- **Patents and innovation credentials.** Accenture has the highest number of patents among the service providers evaluated for this study. Accenture leverages its innovation centers (Accenture Labs, Accenture Studios) to fuel the innovation.
- **Acquisitions.** Accenture has acquired and successfully integrated several companies in Industry 4.0 domain to increase both industry and technology competency. Some of its notable acquisitions are ESP (life science specific competency) and Mindtribe (connected products).

- **Talent availability and retention.** As Accenture is rapidly expanding its Industry 4.0 practice, talent availability and readiness become the key challenges. Accenture is already strengthening its workforce capability through re-skilling and re-aligning experts.



Relevant acquisitions and partnerships	Key clients	Global operations and resources	Industry 4.0 in-house platform and tools
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<p><b>Recent acquisitions:</b></p> <ul style="list-style-type: none"> <li>• <b>ESP:</b> A consulting and manufacturing services provider for life sciences (2019)</li> <li>• <b>Zielpuls:</b> A technology consultancy specializing in the design of smart products and services for automotive companies (2019)</li> <li>• <b>Mindtribe:</b> Engineering consultancy for connected products (2018)</li> <li>• <b>Pillar:</b> Smart embedded software company (2018)</li> <li>• <b>Designaffairs:</b> A strategic design consultancy</li> <li>• <b>Mackevision:</b> A leading global producer of 3D-enabled and immersive product content (2018)</li> </ul> <p><b>Partnerships:</b></p> <ul style="list-style-type: none"> <li>• AWS, Microsoft, Oracle, GE</li> </ul>	<p><b>Number of Industry 4.0 clients:</b> 700+</p> <p><b>Business lines:</b> Automotive (9%), aerospace (5%), transportation (4%), industrial (9%), high-tech (3%), chemicals (13%), consumer goods products (4%), medical devices (0.5%), semiconductor (2%), energy, utility, oil and gas (31.5%), pharma, retail (19%)</p> <p><b>Geographic spread:</b></p> <ul style="list-style-type: none"> <li>• America (46%)</li> <li>• Europe (36%)</li> <li>• Asia Pacific (15%)</li> <li>• Middle East and Africa (1%)</li> <li>• Latin America (3%)</li> </ul> <p><b>Key clients:</b></p> <ul style="list-style-type: none"> <li>• Unilever</li> <li>• Magneti Marelli</li> <li>• Chevron</li> <li>• Faurecia</li> </ul>	<p><b>Industry 4.0 headcount:</b> 10,000</p> <p><b>Delivery locations:</b> More than 150 delivery locations, across 43 countries, including locations in India, China, Japan, Philippines, Brazil, Germany, United Kingdom, Turkey, Netherlands, and Spain.</p>	<ul style="list-style-type: none"> <li>• <b>Related patents and applications:</b> IoT (250), 3D printing (20), robotics (75), IoT analytics (170+), manufacturing analytics (70+).</li> <li>• <b>Accelerators and solutions:</b> 40 implementations covering a diverse range of areas including: asset management, asset management for OEMs, mining, construction sites, connected home, smart buildings and campuses, ports, digital agriculture, connected vehicle, fleet management, downstream and midstream oil and gas terminals, vegetation management and autonomous drone inspection (wind turbines, boilers, confined space inspections), digital plants (chem plants, renewables wind farms, upstream oil and gas), plant automation site assessment, connected tire manufacturing, pharma serialization and production, and many more.</li> </ul>
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# About the authors

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**Tapati Bandopadhyay**

Vice President, Research | HFS Research

Tapati Bandopadhyay is Vice President, Research at HFS. She has over 20 years of experience in technology strategy, consulting, and advisory on artificial intelligence, analytics, automation, DevOps, and services management. She is based in the HFS India office in Bangalore.

Prior to HFS, Tapati set up the AI and automation practice at Wipro and contributed to the growth and success of the firm's HOLMES initiative. She began her analyst career with Gartner, where she handled ITScore, ITSM, and AI and automation across all regions for seven years. She received Gartner business awards and was recognized among top-rated analysts globally. She is a Ph.D. in AI, a gold medallist in engineering, and a DFID scholar at Strathclyde.

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Tanmoy Mondal is a Senior Research Analyst at HFS Research, identifying global trends in engineering services from both industry & technology perspectives, tracking global outsourcing deals & investments including partnership agreements & R&D announcements in the sector and supporting the domain leads in secondary research, data analysis, PoVs and research writing.

Tanmoy has over 5 years of research, pre-sales and market intelligence experience in TCS, HCL and Tracxn. At his TCS and HCL role, he worked on preparing RFP responses including solution construct and commercial proposition. He was responsible for analysing the business scenario for ERP implementation for different industry verticals and participated in several Enterprise Transformation projects across domains to optimize the IT landscape, increasing IT integration among client business verticals, improving productivity and reducing business incidents. At Tracxn, he was part of the emerging technology team that helped finding companies (start-ups) specializing in upcoming technologies (virtual/augmented reality, drone etc.) for acquisition and portfolio investments for PE and VC firms.

Tanmoy holds a Master's in Business Administration from IIFT (Indian Institute of Foreign Trade), and Bachelor of Engineering from Jadavpur University, Kolkata.

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Senior Research Analyst, HFS Research

Mayank Madhur is a Senior Research Analyst at HFS Research, supporting different practice leads in area of Industry Research, IoT and Blockchain by working on secondary research, data analysis, PoVs and research writing.

Mayank has over 4 years of research, pre-sales and software development experience. Prior to HFS he was part of business strategy and pre sales in Altimetrik supporting vertical heads, sales and marketing team. Before it in his HCL Tech role, he worked in the delivery team of a large medical device client for R&D project.

He holds blockchain certification by IIT & IBM on "Blockchain Architecture Design and Use Cases". His other certification include certification on Google analytics, Scrum, Six Sigma, Introduction to IIoT and Industry 4.0 (IIT) etc. to name a few. Mayank holds Master's in Business Administration from Birla Institute of Technology and Science College, Pilani (BITS, Pilani University) and a Bachelor of Engineering in Electrical and Electronics from Jawaharlal Nehru National College of Engineering (Visvesvaraya Technological University), Karnataka.

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**Josh Matthews**

Research Analyst, HFS Research

Josh Matthews is an Research Analyst at HFS Research, based in Cambridge following a Master's programme covering Engineering Management at Cambridge University's Institute for Manufacturing (IfM). His research tackled operational and environmental improvements in industry, and the implementation and management of sustainable initiatives. On behalf of the university, Josh worked on consulting projects with Unilever, as well as SMEs in the tech and marketing spaces.

Josh had previously graduated from Loughborough University with a first-class master's in Chemical Engineering; over the course of this degree he spent a year at Total in the oil refining industry, and a semester at UC Santa Barbara, publishing work which is currently being commercialized on low-CO2 hydrogen production.

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