

# The Forrester Wave™: Global IoT Services For Connected Business Operations, Q4 2018

The 14 Providers That Matter Most And How They Stack Up

by Bill Martorelli and Michele Pelino  
December 4, 2018

## Why Read This Report

In our 27-criterion evaluation of global internet-of-things (IoT) services for connected business operations providers, we identified the 14 most significant ones — Accenture, Atos, Capgemini, Cognizant, Deloitte, Dimension Data, EY, HCL Technologies, IBM, Infosys, KPMG, PwC, Tata Consultancy Services (TCS), and Wipro — and researched, analyzed, and scored them. This report shows how each provider measures up and helps infrastructure and operations (I&O) professionals make the right choice.

## Key Takeaways

### **Deloitte, IBM, Accenture, HCL Technologies, And Atos Lead The Pack**

Forrester's research uncovered a market in which Deloitte, IBM, Accenture, HCL Technologies, and Atos are Leaders; KPMG, EY, PwC, Wipro, Tata Consultancy Services, Cognizant, and Infosys are Strong Performers; and Capgemini and Dimension Data are Contenders.

### **I&O Pros Turn To Global Services Suppliers For Aid In IoT Connected Business Operations**

A diverse selection of global services firms provides offerings to help enterprises define strategies, design and develop solutions, implement and integrate technologies, and manage the vast array of infrastructure, hardware, devices, software, analytics, and security technologies necessary to address IoT-enabled operational use cases.

### **IoT Operations Use Cases, IoT Analytics, And IoT Managed Services Are Key Differentiators**

As enterprises move beyond demonstration-style engagements such as proofs of concept (PoCs) into broadscale deployments, leading global services firms differentiate their IoT offerings by providing in-depth IoT business operations use case expertise as well as expertise in IoT analytics, data management, IoT software platform and integration support, and emerging capabilities for IoT managed services.

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## The 14 Providers That Matter Most And How They Stack Up

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December 4, 2018

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### Related Research Documents

- [The Forrester Wave™: Industrial IoT Software Platforms, Q3 2018](#)
- [Predictions 2019: The Internet Of Things](#)
- [Vendor Landscape: IoT Professional Services](#)



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## IoT Business Operations Often Require Assistance To Achieve Benefits

Leading services firms are moving aggressively to fulfill IoT's potential. In doing so, they're helping expand IoT's potential contribution to business value. Business stakeholders and I&O professionals across industries are turning to IoT solutions to bridge the physical and digital worlds of their organizations.<sup>1</sup> IoT is inextricably linked to firms' broader digital transformation efforts: 59% of global services decision makers at enterprises are investing or planning to invest in IoT solutions to underpin their firms' digital transformations — ingesting information and context through sensors from the physical world and taking actions based on digital insights.<sup>2</sup> Our research shows that:

- › **There are two core domains of IoT activity.** One focuses on IoT connected business operations; the other on IoT-enabled connected products.<sup>3</sup> IoT connected business operations include supply chain processes, field service operations, inventory management, building management, and asset monitoring. This report reviews global services firms specifically for IoT connected business operations. These firms provide capabilities and services that span strategy development, solution implementation, testing and integration, and management. We didn't include service vendor offerings and capabilities for IoT connected products in this Forrester Wave™ evaluation.
- › **Clients need help with IoT strategy, design, development, and deployment.** Services firms are well positioned to help customers with IoT solutions' inherent complexities, including connectivity, management, monitoring, analytics, security, and other functionality. IoT lends itself well to the engagement offerings that these firms often use for emerging technologies, such as holding rapid solutioning workshops at suppliers' demonstration labs. But no single entity, whether a service provider, a software or hardware provider, or a vertical industry specialist, can address all of the many facets of an IoT initiative. Thus, the market for IoT services is inherently an interdependent ecosystem, with disparate providers working together. You will see this reflected in our findings, as no one category of services providers dominates the Leader category.

### A Comprehensive Taxonomy Of IoT Services Has Emerged

To help organizations take advantage of IoT, global services providers offer three primary categories of services:

- › **Assessment services tackle IoT strategy, use case identification, and org design.** During the strategy assessment process, stakeholders from IT and operations work together to identify and evaluate IoT use case opportunities and business case requirements based on corporate priorities, investment requirements, and the competitive landscape. This ensures that all stakeholders have a common understanding of key IoT use cases, priorities, and initiatives. Organizational design services are particularly useful for firms that need to align their company culture with new operational processes and business models to best succeed and capitalize on IoT solutions. While strategy services are clearly significant, many customers need tangible, rapid results, which tends to put the focus on implementation services.

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- › **Implementation services address IoT platform, analytics, and security.** IoT solutions require many different technology elements to work in concert, including network, device, software, infrastructure, analytics, and security elements. Many IoT services firms offer assessment services to help enterprises determine whether their existing network infrastructure, architecture, and security solutions can address the specific requirements of the IoT use case. Other implementation service offerings include IoT security services, IoT software platform implementation, and IoT app development services. Services firms have been under pressure to produce results rapidly, using prototyping capabilities along with prepackaged IP-based solutions; they've been inundated with poorly financed trial engagements and are seeking to escape this "PoC purgatory" with fully realized contracts.
- › **Operations services include managed service and remote monitoring offerings.** Deploying IoT solutions may require trained staff with the expertise to manage IoT solutions in an ongoing manner. Many services firms also offer remote monitoring and diagnostics services to help enterprises run their IoT network infrastructure. Fewer firms offer IoT staff augmentation services to provide enterprises with skilled personnel in the areas of IoT data analytics, application development, and vertically focused IoT use case deployment. Broad-based IoT managed services offerings are relatively immature, and engagements are sparse today, but global services firms believe these offerings will become a significant part of their future IoT market opportunity.<sup>4</sup>

**Multiple Supplier Types Are Vying For IoT Services Industry Leadership**

Varied types of services firms are competing for leadership in the IoT business operations market.<sup>5</sup> In particular, global services firms are helping enterprises identify, design, implement, and run IoT-enabled business operations processes — the focus of this Forrester Wave. Midsize and specialty firms also compete for engagements requiring IoT services for connected business operations.

- › **Consulting firms extend capabilities into IoT and change management services.** Key consulting firms in this analysis include Deloitte, EY, KPMG, and PwC. They combine strong business strategy capabilities and support digital transformation initiatives with IoT strategy assessment, organizational transformation, and change management services. Consulting firms often focus IoT service offerings on large enterprises in certain vertical markets, such as healthcare, energy, manufacturing, and government. While it's not a current strength, they're also developing managed services capabilities, spying a significant market opportunity.
- › **Global systems integrators (GSIs) offer diverse services.** GSIs such as Accenture, Atos, Capgemini, Cognizant, Dimension Data, and IBM as well as India-centric firms such as HCL Technologies, Infosys, TCS, and Wipro provide an array of analysis, implementation, systems integration, IT outsourcing, and business process services. They typically differ from consulting firms via their emphasis on a full range of offerings, including managed services; however, this

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gap is narrowing as GSIs begin to offer services like organizational change management and as consultancies embrace managed services. Many GSIs are expanding their digital transformation and IoT services to include IoT platform enablement and expertise via key vertical industry partnerships.

## With Services Firms' Help, IoT Engagements Are Maturing

The nature of IoT engagements is evolving as clients and suppliers become more conversant with IoT's many facets.

- › **Connected-process IoT engagements apply to a broad range of industries.** Across all vertical markets, firms are using IoT to pursue new business models and digitally transform how they operate. Many I&O execs seek assistance from services firms not only to implement solutions but also to help bring together IT pros and business operations executives to cooperatively determine requirements and navigate organizational dynamics.
- › **Industrial IoT platforms help simplify and enable connected-process deployment.** Many global IoT services firms partner with multiple industrial IoT software platform vendors, such as IBM Watson IoT Platform, Microsoft Azure IoT, PTC ThingWorx, and SAP Leonardo IoT.<sup>6</sup> Early IoT engagements tended to focus on platform implementation, but the emphasis has shifted to engaging with general-purpose cloud platforms and multiplatform interoperability. Having an IoT platform is no longer a significant competitive advantage for services firms.
- › **Analytics and security have become core components of IoT services.** Analytics, machine learning, and the use of artificial intelligence (AI) are important for IoT initiatives. These cognitive technologies enable enterprises to move beyond simply monitoring the state of their connected processes to support predictive maintenance and intelligent workload optimization and scheduling. Analytics services help customers sort through the huge amounts of data that IoT sensors and other devices capture. The broad range of edge devices and the vast amounts of data at rest and in motion need protection, so IoT security services have become another important offering and capability.
- › **The stage is set for creative pricing models.** IoT services providers have primarily relied on traditional services purchasing models, such as time and materials and fixed price. For implementation-focused services, contingent pricing has also been popular. Suppliers report that the use of such models was motivated, at least in part, by the emergent nature of IoT and customer wariness. However, the diverse needs of various stakeholders give services firms an opportunity to consider new revenue-capturing options. Creative pricing structures based on outcomes may prove attractive to customers, given IoT's broad range of buyers — not to mention its high perceived risks.

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**Use Service Partners To Address IoT Implementation Challenges**

As with any technology endeavor, some customers will prefer to go it alone. But when assessing how and where to leverage a services partner, I&O leaders must consider candidates’:

- › **Multisupplier ecosystems.** The diverse technical and process elements that make up IoT business operations solutions often demand that many parties work together effectively. Services firms must overcome their first instinct to do it all themselves and instead partner and navigate multisourcing relationships across the wide array of technology and services suppliers. To align their own investments, I&O leaders must assess these partnership ecosystems.
- › **Ability to engage IT and OT stakeholders.** IoT solutions typically involve multiple business and IT stakeholders, which plays well to services firms’ strengths in working across organizational barriers. However, bridging the information technology/operational technology (IT/OT) divide is anything but simple. Significant technical and cultural barriers exist. Most suppliers in this analysis typically have a stronger presence with IT stakeholders and need to continue developing relationships with OT leaders. I&O execs must ensure that their services firms demonstrate that they can engage all parties.
- › **Future managed service capabilities.** Many firms will need help managing, monitoring, and operating the fragmented array of IoT networks, devices and assets.<sup>7</sup> Pricing models, service levels, and overall engagement governance models remain immature for managed IoT services, so you must be willing to work with your suppliers on these important aspects.
- › **Large-scale deployment experience.** Execs at services firms told us that as many as two-thirds of current IoT services engagements are PoCs or prototypes. I&O leaders must not let PoC experiences overly influence their ultimate deployment choices. For example, a network topology capable of collecting data from 5,000 sensors will likely founder once scaled to 50,000 devices; one month’s data may not reveal the true value and business model trajectory that an IoT initiative can take. Look for services providers with many large IoT deployments under their belts to avoid the potential distortions that a trial implementation presents.

**Global Services For IoT Business Operations Evaluation Overview**

To assess the state of the global IoT services for connected business operations market and see how the vendors stack up against each other, Forrester evaluated the strengths and weaknesses of 14 key global vendors offering IoT services for connected business operations. After examining past research, user need assessments, and vendor and expert interviews, we developed a comprehensive set of evaluation criteria. We evaluated each vendor against 27 criteria, which we grouped into three high-level categories:

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- › **Current offering.** Each vendor's position on the vertical axis of the Forrester Wave graphic indicates the strength of its current offering. Key criteria for these solutions include IoT use case support; IoT strategy assessment; IoT platform implementation and testing services; IoT network infrastructure and monitoring; and IoT managed services.
- › **Strategy.** Placement on the horizontal axis indicates the strength of the vendors' strategies. We evaluated current strategic differentiation, IoT partner ecosystems, and innovation road maps.
- › **Market presence.** Represented by the size of the markers on the graphic, our market presence scores reflect each vendor's total IoT revenues, IoT customer base, and geographic IoT customer distribution.

**Evaluated Vendors And Inclusion Criteria**

Forrester included 14 vendors in this assessment: Accenture, Atos, Capgemini, Cognizant, Deloitte, Dimension Data, EY, HCL Technologies, IBM, Infosys, KPMG, PwC, TCS, and Wipro (see Figure 1). Each of these vendors has:

- › **The ability to provide IoT services across the three principal services categories.** Each vendor demonstrated that it possessed significant capability in assessment and transformation services, implementation services, and operations services for the 12 months ending June 30, 2018.
- › **A minimum of \$100 million in revenues generated from IoT services.** Each vendor generated a combined total of at least \$100 million in revenues from the three categories of IoT services in the past 12 months.
- › **A significant average annual IoT services engagement value.** Each vendor had a significant average annual engagement value across the three key categories of IoT services.
- › **A significant number of customer engagements.** Each vendor had a significant number of customers across the three key categories of IoT services in the past 12 months.
- › **Strong international presence.** Each vendor demonstrated strong geographic reach, with paying clients across the key geographic regions.
- › **A significant focus on offering IoT services to support a wide array of IoT use cases.** Each vendor demonstrated evidence of involvement in a broad array of IoT use cases in client relationships.
- › **Strong Forrester client interest.** Forrester clients inquire about each of these vendors in the context of IoT professional services capabilities.

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**FIGURE 1** Evaluated Vendors

Vendor
Accenture
Atos
Capgemini
Cognizant
Deloitte
Dimension Data
EY
HCL Technologies
IBM
Infosys
KPMG
PwC
Tata Consultancy Services
Wipro

## Vendor Profiles

We intend this evaluation of the global IoT services market for connected business operations to be a starting point only and encourage clients to view detailed product evaluations and adapt criteria weightings to fit their individual needs through the Forrester Wave Excel-based vendor comparison tool (see Figure 2 and see Figure 3). Click the link at the beginning of this report on Forrester.com to download the tool.



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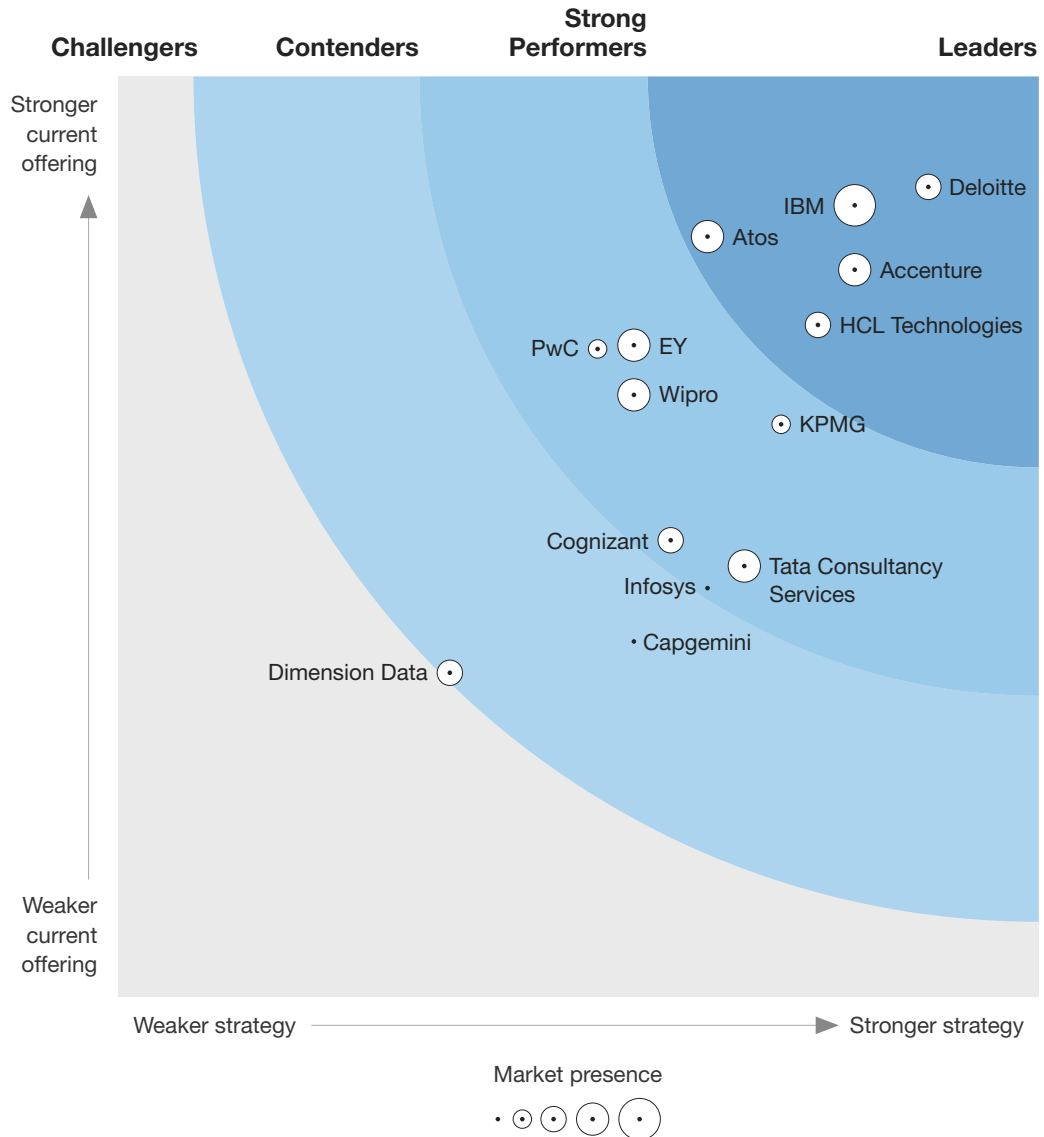
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**FIGURE 2** Forrester Wave™: Global IoT Services For Connected Business Operations, Q4 2018

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**Global IoT Services For Connected Business Operations**

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**FIGURE 3** Forrester Wave™: Global IoT Services For Connected Business Operations Scorecard, Q4 2018

	Forrester's weighting	Accenture	Atos	Capgemini	Cognizant	Deloitte	Dimension Data	EY
<b>Current offering</b>	50%	3.95	4.13	1.93	2.48	4.40	1.76	3.54
IoT use cases and IP	25%	5.00	3.00	2.32	4.34	3.66	2.34	3.00
IoT assessment and transformation services	30%	3.00	5.00	2.00	1.00	5.00	1.00	4.00
Implementation services	30%	4.60	4.30	1.80	2.80	5.00	2.10	3.80
IoT operations services	15%	2.80	3.90	1.40	1.70	3.20	1.60	3.00
<b>Strategy</b>	50%	4.00	3.20	2.80	3.00	4.40	1.80	2.80
Current strategic differentiation	20%	5.00	3.00	3.00	3.00	5.00	1.00	3.00
Vision and positioning for IoT services	10%	3.00	3.00	3.00	3.00	3.00	3.00	5.00
Services relationship to digital transformation	10%	3.00	3.00	5.00	3.00	5.00	3.00	3.00
Innovation road map	10%	3.00	3.00	3.00	5.00	5.00	1.00	3.00
Investment in resources and capabilities	10%	3.00	3.00	5.00	3.00	5.00	3.00	3.00
Pricing structures and business models	10%	3.00	5.00	1.00	1.00	5.00	3.00	3.00
IoT partner ecosystem	20%	5.00	3.00	1.00	3.00	3.00	1.00	1.00
Innovation centers	10%	5.00	3.00	3.00	3.00	5.00	1.00	3.00
<b>Market presence</b>	0%	3.60	4.00	1.00	3.00	3.00	2.40	3.40
Total IoT revenues	30%	3.00	5.00	1.00	5.00	3.00	1.00	3.00
Average IoT deal size	20%	3.00	5.00	1.00	3.00	3.00	1.00	5.00
IoT customer base	30%	5.00	3.00	1.00	1.00	3.00	3.00	3.00
Geographic IoT customer distribution	20%	3.00	3.00	1.00	3.00	3.00	5.00	3.00

All scores are based on a scale of 0 (weak) to 5 (strong).

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**FIGURE 3** Forrester Wave™: Global IoT Services For Connected Business Operations Scorecard, Q4 2018 (Cont.)

	Forrester's weighting	HCL Technologies	IBM	Infosys	KPMG	PwC	Tata Consultancy Services	Wipro
<b>Current offering</b>	50%	3.65	4.30	2.22	3.11	3.52	2.34	3.27
IoT use cases and IP	25%	4.32	5.00	2.34	3.00	3.68	2.98	3.00
IoT assessment and transformation services	30%	3.00	5.00	1.00	4.00	5.00	1.00	3.00
Implementation services	30%	3.50	3.40	3.20	3.30	2.60	3.10	3.90
IoT operations services	15%	4.10	3.50	2.50	1.15	2.10	2.40	3.00
<b>Strategy</b>	50%	3.80	4.00	3.20	3.60	2.60	3.40	2.80
Current strategic differentiation	20%	5.00	3.00	3.00	3.00	3.00	3.00	3.00
Vision and positioning for IoT services	10%	3.00	3.00	3.00	5.00	3.00	3.00	3.00
Services relationship to digital transformation	10%	3.00	5.00	1.00	5.00	3.00	3.00	3.00
Innovation road map	10%	5.00	3.00	5.00	3.00	3.00	5.00	3.00
Investment in resources and capabilities	10%	5.00	5.00	3.00	3.00	1.00	3.00	3.00
Pricing structures and business models	10%	3.00	5.00	3.00	1.00	3.00	3.00	1.00
IoT partner ecosystem	20%	3.00	5.00	5.00	5.00	1.00	3.00	3.00
Innovation centers	10%	3.00	3.00	1.00	3.00	5.00	5.00	3.00
<b>Market presence</b>	0%	2.40	5.00	1.00	2.00	1.80	3.40	3.20
Total IoT revenues	30%	3.00	5.00	1.00	1.00	1.00	3.00	3.00
Average IoT deal size	20%	3.00	5.00	1.00	1.00	3.00	3.00	5.00
IoT customer base	30%	1.00	5.00	1.00	3.00	1.00	3.00	1.00
Geographic IoT customer distribution	20%	3.00	5.00	1.00	3.00	3.00	5.00	5.00

All scores are based on a scale of 0 (weak) to 5 (strong).

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**Leaders****› Deloitte offers a breadth of IoT assessment, implementation, and operations services.**

Deloitte's global IoT practice includes engineers, data scientists, cybersecurity analysts, and consultants dedicated to helping clients address their IoT service requirements. Its insights-driven organization method focuses on IoT-enabled equipment maintenance, asset visibility, fleet optimization, and process automation issues. Deloitte offers predesigned IoT solutions for predictive maintenance, asset tracking, and asset performance management as well as a dedicated IoT DevOps practice that supports solutions to monitor network connectivity between connected edge devices and machinery programmable logic controllers (PLCs). This vendor sees great opportunity for growth in its Smart Factory solutions, which combine multiple use cases, including security, fleet management, asset management, predictive maintenance, inventory and warehouse management, supply chain, and track-and-trace capabilities.

Deloitte needs to further evolve its vision and strategy for edge processing solutions to address emerging opportunities and use cases in this area. The company plans to invest \$250 million or more in IoT and related business over the next three years. Most of Deloitte's intellectual property (IP) is tailored for industrial operations use cases in the manufacturing, chemical, automotive, energy, pharmaceuticals, and medical device sectors.

**› IBM expands beyond embedded solutions to offer a wide range of IoT capabilities.** IBM has an exceptionally broad range of capabilities, including its Watson IoT platform and strength in analytics. When it announced in 2015 that it would invest \$3 billion in the IoT opportunity, IBM indicated its clear intention to become a leading supplier in IoT with R&D-focused innovation and extensive services.<sup>8</sup> While it competes with a broad array of companies, including small "aspirational" IoT players, it has the capability of serving as a lead integrator at a program level.

While IBM's capabilities are vast, it needs to further expand how it leverages the broader IoT ecosystem. IBM intends to establish a design facility in India, where it will codesign IoT devices with customers. It also plans to develop a drone-based inspection solution, among many other initiatives. IBM maintains IoT-specific demonstration centers in Bengaluru, India, and in Munich. Although it focused initially on embedded devices, IBM's strategy has expanded considerably to address multiple connected-product and connected-process opportunities. IBM is a good fit for customers seeking a supplier with a significant range of capabilities across multiple industries.

**› Accenture's global Industry X.0 unit offers comprehensive industrial IoT services.**

Accenture offers a wide range of IoT strategy assessment, implementation, operations, and staff augmentation services. The company supports its own IoT software platform, Connected Platforms as a Service (CPaaS), as well as an extensive array of third-party IoT software platforms. Accenture's data analytics scientists have developed a catalog of more than 230 advanced analytics applications. The firm's IoT accelerators and solutions, such as Connected Asset

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Management, Connected Mine, Digital Agriculture, Digital Factory, Fleet Management, Smart Building/Campus, and Smart Manufacturing, are designed to help enterprises integrate predictive maintenance, asset monitoring, energy optimization, and networking architecture services.

Accenture's IoT and industry X.0 innovation initiatives include offering IoT-enabled digital production and operations solutions that leverage the firm's expertise in enterprise resource planning (ERP) processes as well as integrating 3D printing technology into production environments. Accenture's IoT solutions are particularly relevant to firms in the transportation, manufacturing, industrial equipment, and healthcare sectors; however, the firm needs to extend its managed service offerings.

› **HCL broadens its engineering heritage with strong platform implementation.** HCL

Technologies' market focus on supporting customers' product development, R&D, and engineering efforts has been the wellspring of the company's approach to IoT opportunities; it's now expanding to encompass additional opportunities in connected processes. Its business unit, IoT WoRKSTM, offers a family of enabling software products, although the company also supports a broad array of IoT platform alternatives. This vendor has two primary IoT laboratories, located in Noida, India, and Redmond, Washington. HCL intends to expand its already impressive range of prepackaged solutions as well as flesh out its vision and a scalable business model for managed IoT services.

HCL has a well-rounded strategy, but expanding its IoT laboratories and targeting business buyers would be positive moves. HCL is a strong fit for IoT opportunities that require strong platform engineering capabilities. If a customer is seeking a supplier capable of an ongoing operational relationship, HCL is an appropriate choice.

› **Atos extends IoT services expertise through acquisitions and partnerships.** Atos offers Codex IoT, a set of IoT applications, blueprints, platforms, and business services, as well as development, hosting, and integration services on both its own and its partner platforms, especially Siemens MindSphere. Atos provides a broad range of managed services for edge solutions; hybrid platforms; and, together with Worldline (its subsidiary specializing in payments and transaction services), IoT connectivity. The firm's customers are concentrated in Europe. However, in October 2018, the company merged with Syntel, expanding its North American presence; consultant resources; and vertical expertise, primarily in banking, finance, and insurance. (This acquisition occurred after the cutoff date for this analysis and thus is not reflected in Atos' score.)

Atos has a rich partner ecosystem and a willingness to collaborate with other vendors, which customers highlight as a key differentiator. It should continue to extend its partner ecosystem and innovation center presence to align with evolving IoT market requirements. Atos' road map focuses on blockchain, cognitive learning, AI and machine learning (ML), and multiplatform integration solutions to help firms manage the growing volume and complexity of IoT data. Enterprises turn to Atos for vertical solutions to address connected vehicles, connected homes, industrial IoT, smart grids, and energy and utilities markets.

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**Strong Performers**

- › **KPMG's targeted investments and Innovation Network highlight its IoT approach.** Like other members of the Big Four, KPMG brings strong strategy, operations, and change management competencies to bear, along with insights into the regulatory and tax implications for IoT operations. KPMG prefers to deploy its IoT capability horizontally across its management and risk consulting offerings. It also supports a very healthy distribution of IoT platforms. KPMG uses its Innovation Network — representing some 750 participating partners and customers — to address a broad range of use cases and accelerate delivery to market. As opposed to merely partnering with promising technology startups, the firm prefers to take the minority investment route, as it did with Australian agricultural startup The Yield in 2017 and with data and analytics startup Nuonic in 2018. KPMG's priorities over the next 24 months include smart cities/venues, Industry 4.0 solutions, mobility-as-a-service, and end-to-end logistics.

KPMG would benefit from additional bench strength in analytics and operational services, along with additional innovation centers. The firm's case histories reveal robust capability across IoT use cases and vertical industries, making it a good partner for a variety of IoT domains.

- › **EY's IoT IP helps enterprises architect and protect their connected environments.** EY's IoT services encompass strategy, architecture, platform, solution implementation, and integration. IoT strategy services capabilities include assessment, vision, transformation, IoT/IT governance, solution design and support, and consulting services to address the human impact of deploying IoT solutions. EY offers a proprietary IoT platform, Synapse, to operationalize analytics, and has established formal agreements with IoT platform providers that include General Electric (GE), IBM, Microsoft, and SAP. Its extensive array of IoT IP assets and prepackaged solutions is a differentiator and includes a condition-based maintenance application, power generation forecasting for wind farms, IoT for smart cities, IoT blockchain tokenization, and augmented customer experience solutions.

EY needs to expand its IoT business process management and organizational design services to compete more effectively with other firms in this evaluation. It plans to invest \$1 billion in new technology solutions, including IoT, along with client services and the EY ecosystem over the next two years. EY addresses key customer use cases that include security and surveillance, supply chain management, and intelligent customer services.

- › **PwC expands beyond GE Predix with broader IoT industry participation.** PwC is well aware of IoT's unique nature as an ecosystem-oriented play, where no single provider can do it all, as well as its transformation focus. As a Big Four accounting company, PwC differentiates its IoT capabilities by integrating tax, business regulation, data, and biometric privacy and security in IoT engagements; pursuing asset-intensive industries for connected device applications is another focus. PwC emphasized the GE Predix platform in its early IoT activities but has since broadened its platform coverage to encompass alternatives, including Microsoft Azure, SAP, and Siemens Mindsphere. Amid the many IoT use cases that PwC supports, digital operations is a keen area of

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interest, for which it's developing a range of prefabricated, industry-specific solutions. PwC plans to continue strengthening its horizontal solutions, including smart factory, connected supply chain, predictive maintenance, and connected products. The firm also continues to expand its network of IoT solution partners that can create sector-specific variations of vertical industry solutions.

PwC is a strong alternative for front-end assessment and strategy engagements but would benefit from additional implementation service breadth and operational service focus. PwC is a good fit for customers currently seeking extensive strategy, operations, and change management capabilities.

- › **Wipro covers IoT from connected products to enterprise transformation.** Wipro's new Industrial & Engineering (I&E) service line combines the company's key strengths in both connected products and connected processes. Connected products is a natural strength, given Wipro's extensive history in engineering engagements. Without a platform of its own, Wipro primarily focuses on emerging cloud-centric platforms, including Amazon Web Services (AWS) and Microsoft Azure, as well as industrial offerings from companies like GE Digital and PTC. Wipro will administer its planned investment for IoT through its I&E unit and will focus on emerging technologies like blockchain, ML, deep learning, AI, and 3D printing.

While Wipro sees a strong transformational impact for IoT, its current approach is limited beyond connected products. The firm envisions that the role of IoT will deliver new revenue-generating businesses and ultimately transform the enterprise; however, it's still building for this opportunity in the services it delivers. Wipro is a good fit for clients in manufacturing, technology, healthcare, and energy verticals as well as those with significant experience with offshore sourcing.

- › **TCS offers platform flexibility and an IoT strategy rooted in its manufacturing heritage.** Tata Consultancy Services' IoT activities are rooted primarily in connected products, where it has 20,000 individuals involved with client product development engagements, and in Smart Factory, where it leverages its 25-year history providing manufacturing industry solutions. TCS adapted its own Ignio cognitive platform to address IoT but also supports a growing range of alternatives, including leading cloud-based platforms like AWS and Microsoft Azure. Among the firm's IoT assets is its TCS Connected Universe Platform, which helps clients connect assets, manage devices, process data streams, run analytics, and create new services. TCS is also developing a range of repeatable, preconfigured vertical IoT solutions. The firm's innovation road map for IoT is relatively IT-centric and full-featured, including a solution for standardized and secured edge devices, a mature ML platform for cross-industry implementation, and blockchain integrated into supply chain management.

This vendor would benefit from additional bench strength across its plan, build, and operate services. TCS is a strong fit for customers seeking a provider for connected-device applications as well as manufacturing domains, including smart factory and supply chain applications.

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- › **Cognizant delivers enterprise IoT services to asset-intensive industries.** Cognizant redefined its IoT digital business strategy in 2017 to help firms build turnkey solutions for smart products and enable smart processes in consumer, enterprise, and industrial environments. The firm also provides specific point solutions for government or city settings. Cognizant has built expertise in sensors and hardware, IoT applications, IoT operational intelligence, and IoT analytics and has established partnerships with key IoT platform and infrastructure providers. Cognizant's IoT solution accelerators include APEX and OnePlant, manufacturing operations solutions; 1Facility, a connected places solution; 1Fleet, a telematics fleet management solution; IDATS, an IoT test automation and orchestration platform; and TEBOT, a robotic IoT testing framework. The firm's innovation road map is comprehensive, addressing predictive analytics, cognitive analytics, machine learning, robotic process automation, and blockchain.

Currently, Cognizant's IoT managed services are limited relative to others in the evaluation. Cognizant primarily focuses on addressing building and facilities management, energy management, fleet management, plant automation, and shop floor intelligence use cases.

- › **Infosys' engineering focus and systems integrator heritage inform its IoT strategy.** Infosys bases its approach to IoT on its heritage in engineering services, both functionally and organizationally. Infosys's platform implementation capabilities focus on relatively narrow support for AWS, Microsoft Azure, and PTC ThingWorx. The company's activities in IoT span the consumer and industrial IoT divide, addressing both connected-product and connected-process engagements. Infosys targets opportunities in retail financial and asset-heavy industries to which it can bring its strength in connected device and remote diagnostics. As well as developing advanced technologies like augmented reality/virtual reality (AR/VR), blockchain, and robotics, Infosys intends to pursue additional digital twin solutions for the factory floor, serviceability solutions for industrial pumps, and blockchain solutions for supply chain and trade finance applications. Among Infosys' strengths are relatively strong capabilities in IoT analytics and managed services.

While Infosys' strategy features strong plans for innovation and a robust partner ecosystem, its approach would benefit from additional transformational services depth. Infosys is a good choice for customers seeking a classic systems integration approach with strong IT competencies.

## Contenders

- › **Capgemini differentiates on engineering expertise and IoT data analytics solutions.** In IoT customer engagements, Capgemini often uses its own XIOT platform, which includes software and infrastructure components to enable asset connectivity and simplify end-to-end IoT solution deployment. The company offers IoT solution accelerators, including AutoPulse, a predictive asset health solution, and Predict Engineering Analytics Platform (PredictEAP), including plug-in modules for predictive maintenance and other engineering analytics use cases. Capgemini offers a wide range of analytics services, including engineering information management; advanced modeling simulations; and advanced analytics applications for product design, manufacturing, supply chain, operations, and service.



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Capgemini needs to extend the breadth of its IoT IP and prepackaged applications beyond product development to include IoT operations use cases. The firm's innovation road map includes enhancing AR/VR and 3D printing solutions and accelerating its cognitive operations capabilities. Capgemini's vertical expertise addresses factory, home, automotive, and healthcare solutions for customers in North America, Europe, and Asia Pacific.

- › **Dimension Data's IoT focus is on system integration and managed services.** Dimension Data offers IoT application services on SAP Cloud Platform and SAP Leonardo as well as IoT security services that include assessments, architecture, design, and managed services. NTT acquired Dimension Data in 2011, thus expanding Dimension Data's overall technology and IP resources and providing it with the ability to extend the breadth and variety of its IoT implementation and managed services. The firm will also benefit from NTT's August 2018 announcement that it will create a new global innovation fund — NTT Venture Capital — by March 2019 to extend NTT's investment in digital technology.<sup>9</sup>

Dimension Data has extensive experience deploying IoT-enabled building management, security, and surveillance solutions. It's also adept at addressing niche IoT use cases to track and analyze the location of bicycles in the Tour de France or to enable animal and general conservation in South Africa. Dimension Data needs to establish a deeper reach to customers that require IoT services beyond the firm's current strength in building management, security and surveillance, sports tracking, and general conservation.

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## Supplemental Material

### Online Resource

The online version of Figure 2 is an Excel-based vendor comparison tool that provides detailed product evaluations and customizable rankings. Click the link at the beginning of this report on Forrester.com to download the tool.

### Data Sources Used In This Forrester Wave

Forrester used a combination of four data sources to assess the strengths and weaknesses of each solution. We evaluated the vendors participating in this Forrester Wave, in part, using materials that they provided to us by November 20, 2018.

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- › **Vendor surveys.** Forrester surveyed vendors on their capabilities as they relate to the evaluation criteria. Once we analyzed the completed vendor surveys, we conducted vendor calls where necessary to gather details of vendor qualifications.
- › **Executive briefings.** We asked each vendor to make members of its executive team available to us to share its vision, road map, and strategy. We used findings from these conversations to better understand each vendor's approach to the particular needs of the global IoT services for connected business operations sector.
- › **Two detailed IoT use case histories.** We asked vendors to provide in-depth details of two IoT business operations use cases to demonstrate their comprehensive IoT services capabilities. We used these two IoT use case histories to validate details of each vendor's IoT services capabilities.
- › **Customer reference calls.** To validate product and vendor qualifications, Forrester also conducted reference calls with up to three of each vendor's current customers.

**The Forrester Wave Methodology**

We conduct primary research to develop a list of vendors that meet our criteria for evaluation in this market. From that initial pool of vendors, we narrow our final list. We choose these vendors based on 1) product fit; 2) customer success; and 3) Forrester client demand. We eliminate vendors that have limited customer references and products that don't fit the scope of our evaluation. Vendors marked as incomplete participants met our defined inclusion criteria but declined to participate or contributed only partially to the evaluation.

After examining past research, user need assessments, and vendor and expert interviews, we develop the initial evaluation criteria. To evaluate the vendors and their products against our set of criteria, we gather details of product qualifications through a combination of lab evaluations, questionnaires, demos, and/or discussions with client references. We send evaluations to the vendors for their review, and we adjust the evaluations to provide the most accurate view of vendor offerings and strategies.

We set default weightings to reflect our analysis of the needs of large user companies — and/or other scenarios as outlined in the Forrester Wave evaluation — and then score the vendors based on a clearly defined scale. We intend these default weightings to serve only as a starting point and encourage readers to adapt the weightings to fit their individual needs through the Excel-based tool. The final scores generate the graphical depiction of the market based on current offering, strategy, and market presence. Forrester intends to update vendor evaluations regularly as product capabilities and vendor strategies evolve. Vendors marked as incomplete participants met our defined inclusion criteria but declined to participate in or contributed only partially to the evaluation. For more information on the methodology that every Forrester Wave follows, please visit [The Forrester Wave™ Methodology Guide](#) on our website.

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**Integrity Policy**

We conduct all our research, including Forrester Wave evaluations, in accordance with the [Integrity Policy](#) posted on our website.

**Endnotes**

- <sup>1</sup> In the past few years, IoT has gained momentum; 70% of global telecom decision makers at enterprises (1,000-plus employees) are using or planning to use IoT-enabled applications. Source: Forrester Analytics Global Business Technographics® Networks And Telecommunications Survey, 2018.
- <sup>2</sup> Source: Forrester Analytics Global Business Technographics Business And Technology Services Survey, 2018.
- <sup>3</sup> See the Forrester report "[Vendor Landscape: IoT Professional Services.](#)"
- <sup>4</sup> See the Forrester report "[Predictions 2019: The Internet Of Things.](#)"
- <sup>5</sup> See the Forrester report "[Vendor Landscape: IoT Professional Services.](#)"
- <sup>6</sup> See the Forrester report "[The Forrester Wave™: Industrial IoT Software Platforms, Q3 2018.](#)"
- <sup>7</sup> See the Forrester report "[Predictions 2019: The Internet Of Things.](#)"
- <sup>8</sup> Source: "IBM Connects 'Internet of Things' to the Enterprise," IBM press release, March 31, 2015 (<https://www-03.ibm.com/press/us/en/pressrelease/46453.wss>).
- <sup>9</sup> Source: "NTT takes new steps to grow its global business and drive innovation going forward," Dimension Data press release, August 7, 2018 (<https://www.dimensiondata.com/en/news/ntt-takes-new-steps-to-grow-its-global-business-drive-innovation-going-forward>).

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