REPORT REPRINT

# Infosys applies its own tools and accelerators to deliver IoT-enabled aftermarket services for manufacturers and OEMs

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With the as-a-service economy becoming mainstream, there is increasing pressure on OEMs to switch to outcome-based business models. This pressure is driving increased adoption of IoT-enabled service models and Infosys is engaging with manufacturing clients embarking on such servitization projects.



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## Introduction

With the as-a-service economy becoming mainstream and appetite for large capital investments reducing, there is increasing pressure on OEMs to switch to outcome-based business models. These pressures are driving increased adoption of IoT-enabled service models and Infosys is engaging with manufacturing clients embarking on such servitization projects. To support these projects, Infosys has built accelerators spanning both IT and IoT such as its AI framework KRTI 4.0, developed in partnership with consulting and engineering company Poyry and Nokia, as well as its collaborative workplace Infosys XR platform and its Infosys Wingspan online learning platform.

## 451 TAKE

The as-a-service economy requires the convergence of enterprise IT systems with operational insights derived from connected products. As a systems integrator, Infosys has a core competency in working with industrial clients to integrate these systems and in applying IoT data to enable new business models. It has developed a key strength in remotely managing IoT-enabled aftermarket services for manufacturers and OEMs, pulling together cloud platforms, service management platforms and digital twins to change market dynamics in areas such as product warranty.

## Strategy

The Infosys Manufacturing service line, which is a key vertical for Infosys, bringing in $4.3bn in revenue in FY 2020, has a number of go-to-market themes that address servitization, connected products and smart manufacturing. Using the Infosys digital framework, these themes are each mapped to the manufacturing sub-verticals that Infosys works with: aerospace, automotive, industrial, high-tech, CPG, pharma, life sciences, chemicals and mining. As part of this framework, Infosys applies its vertical platforms, IoT and digital product engineering skills to address smart asset management and field services. A growing number of manufacturing clients buy a service lifecycle management contract under which Infosys designs, implements and manages solutions pertaining to parts, the execution of field services, fleet management and AR/VR. The sale of aftermarket services for manufacturing clients is a fast-growing chunk of revenue for Infosys, generating over a billion dollars of revenue for the company.

Infosys projects range from a full-service lifecycle transformation engagement to, say, a project applying AR/VR technology to enable service personnel tooling. For example, Infosys provides business process management (BPM) aftermarket services to an aerospace manufacturer that sells systems to the aero sector with Infosys then coordinating repairs, estimating costs and calling the repair service team (which can be the operational client or a third-party maintenance provider). Infosys does this using the client's system. For a lift manufacturer, Infosys monitors elevators and provides an advanced service desk, while for a high-tech manufacturer, Infosys provides a call center helpdesk for products and services, managing a significant number of transactions with the manufacturer's channel. With a printing equipment manufacturer, Infosys supports its connected printer, printing as-a-service capability via a BPM contract – Infosys sets the contract up and monitors consumption and terms and conditions using data coming from the printers to spot inconsistencies and realignments. For these types of projects, Infosys is seeing business process management software becoming increasingly important as platforms for pulling data for IoT-enabled services and enabling stakeholders to take appropriate actions. Infosys also uses its management consulting competencies to help clients when there is an intersection between field services and back office processes. For example, this type of work was completed on a project for an automotive OEM that called for bespoke workflows between connected vehicle data predictive maintenance and service execution to be integrated.

## Servitization

The as-a-service economy requires a servitization business model that enables several organizational business processes and systems to work in sync with, and leverage the data emanating from, IoT devices installed in connected equipment. These processes include field service management, knowledge management, customer relationship management, billing and fleet management. Therefore, there's need for intake of IoT data into enterprise systems and Infosys has experience of this from working with multiple clients, using KRTI 4.0.

KRTI 4.0 is an AI-based Infosys asset, developed in partnership with Poyry and Nokia, that helps predict asset downtime, calculate mean time before failure and mean time to repair using reliability-based analysis and cause-consequence modeling, knowledge modeling technologies and ML to improve asset efficiency. Various building blocks of KRTI 4.0 have been used in customer scenarios. One of these use cases is to optimize performance, reliability and safety of the wastewater pumping station for a paper and pulp plant. Here IoT is helping in bringing the necessary operational data in real time to predict the time to failure of assets more accurately, helping the pump manufacturer be more proactive in ensuring equipment uptime. By applying the KRTI 4.0 AI-based RAMS framework (Reliability, Availability, Maintainability and Safety) models, Infosys could influence system performance and technical documentation. A combination of real-time data and tribal knowledge is combined to predict pump failures and calculating risk levels to determine the best maintenance date. However, if another pump begins to look problematic, then this date can be proactively managed differently and risk classification elevated. The system also interfaces with inventory and so can trigger an order for spare parts.

With KRTI 4.0, Infosys can also help with the maintenance team by using a smart app to fix problems incorporating AR. A risk index is created based on the health of the system, individual assets and inventory. Real-time information comes in via the Infosys IoT Gateway to the Nokia Impact IoT platform, which has embedded security. The framework then decides on the right model based on ML to create proactive updates. If a client has very little data at the beginning of a project, then Infosys can define some of the maintenance activity from operational and maintenance manuals and bring that into the models to simulate data sets. Typically, Infosys can build the model and deploy it within a few months with up to 90% accuracy and then there will be incremental improvements via updates based on the monitoring data coming into the system.

Infosys is working with multivendor environments, applying KRTI 4.0 to create a system of systems at a platform level so that Infosys can pull data into dashboards based on the IoT stack and implement the required capability in a heterogenous product environment. With older equipment, it is more challenging to implement a system or systems because the protocols are specific, but modern machines take a service mesh approach, which makes it easier for systems integrators to pursue this approach.

Infosys has three live implementations of KRTI 4.0 in project engagements with customers that are interested in using its Fault Tree to map solution data to help with diagnostics that identifies the right failing part with probability scores, then offers the part with the next highest probability for failure and so on. Infosys Smart Asset Troubleshooting Solution uses this Fault Tree capability to create condition monitoring systems for clients. Infosys finds that clients are opting for scalable projects using these Infosys offerings, beginning with the development of a platform to, for example, collect driver behavior data, which, when used in conjunction with analytics, informs work order management systems, and the platform then becomes a central way of incrementally connecting more systems to the service value chain.

## Field services

The impact of servitization on field services is twofold. First, due to the ongoing changes in the way data and insights are made available to the field service agents through AI/ ML and similar advanced technologies, field service agents need to be familiar with using software, handheld devices and computers to view and update information about assets. Second, the diagnosis of equipment is increasingly driven by error codes thrown up by IoT devices in connected equipment as opposed to traditional mechanisms, so technicians need to be more conversant with sophisticated diagnostic tools. For Infosys, this translates into two main types of requirements: field service agent training on the one hand and operational 'on the job' support on the other. For such projects Infosys works in the design phase, creating large-scale models to help collaboration; it works in training to build up content to ramp up teaching and it works in operations and maintenance building plans to improve operational efficiency using the ecosystem partners such as PTC or Unity to build 3-D visualization models.

The Infosys XR Platform is the primary asset used by the company for these scenarios using a variety of technologies such as AR, VR and XR and various devices like HoloLens. In one of its use cases, hands-free maintenance operations were achieved in a pharmaceutical equipment environment. The HoloLens-based system enables engineers to get daily help on tasks to be performed, operating instructions and manuals. The engineer is guided with inspection and safety instructions augmented with real-world scenarios. Other use cases include polio vaccine culture gamification, a high-tension electrical cable cleaning robot, an AR-based inspection and testing tool for aircraft components, and aircraft module assembly using XR and HoloLens. Other devices like RealWear attached to hard hats are helping technicians through voice interface and hands-free operations providing much-needed support with mixed reality workarounds.

Wingspan is the Infosys Learning Experience Platform, accessed from a hand-held device. The Wingspan platform is being used by a leading automotive manufacturer to deliver on-demand, mobile-based training to its dealers' service technicians. In another scenario, the Platform is being used by Infosys to help one of its industrial manufacturing customers to leverage IoT data to decipher likely root causes of an equipment issue, search for relevant knowledge artifacts such as technical manuals and service bulletins and pushes these artifacts proactively to service technicians. The Infosys Meridian remote-first, cloud workplace collaboration platform is also being used by manufacturers to provide immersive yet remote training experiences to their value chain partners.

In the Infosys client base, the company has clients that are looking to equip their technicians to inform and educate their end customers about the benefits that advanced IoT-enabled capabilities can deliver, but many clients have not reached this point of providing education about advanced services. Consequently, Infosys sees only a slow shift in the metrics used by manufacturing clients to measure the performance of their technicians.

## Competition

Infosys faces some of its traditional IT SI competitors in the IoT space, including Cognizant, HCL, TCS and Wipro in the US, Atos in Europe and Accenture and Deloitte globally. From the OT market, there is huge scope for 'co-opetition' with partners such as Dassault and Siemens that have their own professional service arms. Infosys will also occasionally compete with partners such as IBM.

## SWOT Analysis

### STRENGTHS

Infosys has a playbook for manufacturing clients that addresses their servitization initiatives, bringing together its Service Lifecycle Management services and IoT capabilities, tools and accelerators to support clients' end-to-end IoT-driven field service needs, working with its rich partnership ecosystem.

### WEAKNESSES

Despite its engineering credentials and its impressive partner ecosystem for operational project delivery, Infosys is a brand much better known for its enterprise IT expertise than for its OT capabilities and so Infosys should market its OT capabilities more.

### OPPORTUNITIES

Infosys product engineering services has plenty of opportunities to help OEMs fast-track the design and launch of new connected products, while its experience in providing connected equipment command centers supports new data monetization strategies for manufacturers and OEMs.

### THREATS

A key impediment to OEMs investing in IoT-enabled services lies with the difficulty they have in articulating the value of advanced services to their customers. A lot of market education is required to get to a more digitally mature buyer mindset.