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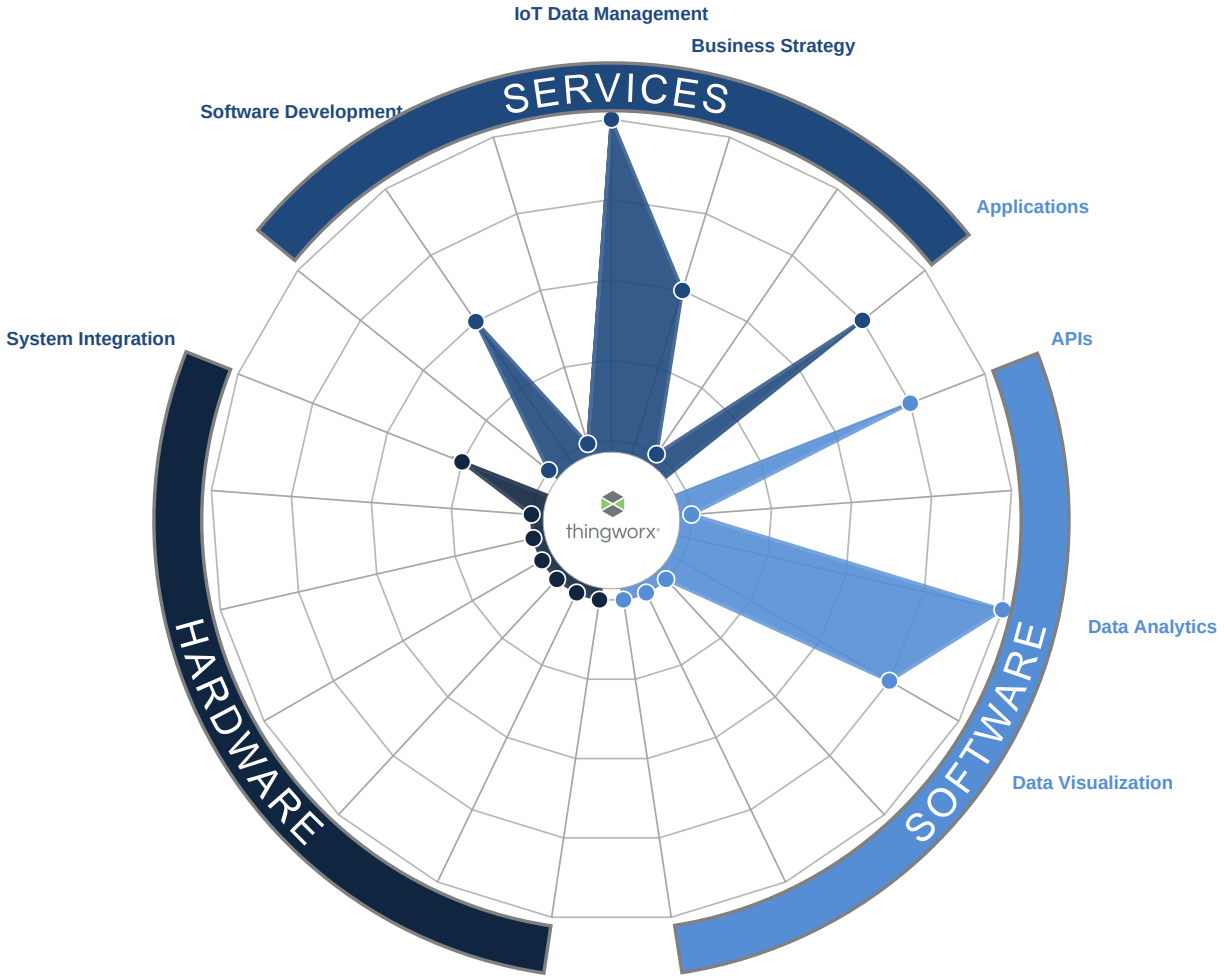
Service Transformation: Evolving Service Business in the IoT Era



Overview

Applicable Industries


Equipment & Machinery


Medical Devices & Equipment

Applicable Functions


Production - Manufacturing

Use Cases


Machine Condition Monitoring


Equipment Efficiency Optimization

Challenge

Manufacturers need to create new revenue streams while competing more effectively in the global market that seems fixated on lowest-cost production. Service revenue is becoming increasingly important to manufacturers to maintain profitability -- manufacturers want to capture upward of 30% of revenue from services, and 74% of manufacturing executive identified service as a significant driver of future revenues.

Customer

All manufacturers who want to transform service to avoid commoditization, maximize customer satisfaction, and increase revenue.

Solution

PTC offers a framework to evaluate and implement the technologies that enable manufacturers to realize results. The approach consists of three distinct stages: understand, advance, outperform.

1) Understand: Make smarter decisions by analyzing service and product data in real-time

2) Advance: Differentiate service offerings by improving and expediting the way products are serviced

3) Outperform: Completely redefine value with new service offerings and business models

Solution Type

IOT

Solution Maturity	Mature (technology has been on the market for > 5 years)

Operational Impact

Impact #1	A world leader in air conditioning systems, services and solutions transformed its business model and connected its assets.
Impact #2	A manufacturer of integrated cancer therapy systems is using remote monitoring and access to identify issues and complete repairs without on-site visits.
Impact #3	A global manufacturer of high quality welding, cutting, and joining equipment, ensured that parts could be delivered seamlessly to technician and customers.

Quantitative Benefit

Benefit #1	For every dollar in equipment sales, upward of 12 dollars in service revenue is realized for a world leader in air conditioning systems, services, and solutions.
Benefit #2	Mean time to respond for equipment problems in cancer therapy medical devices decreased 50%, and site visits costing roughly $2,000 per event, declined 42%.
Benefit #3	A global manufacturer increased service efficiency by decreasing service costs by $1.2 million and increased parts revenue by $2 million.

Service Transformation: Evolving Your Service Business in the Era of Internet of Things

How can manufacturers create new revenue streams while also competing more effectively in a global market that seems fixated on lowest-cost production? Service transformation, enabled by connected technologies and alternative service approaches, is the key to diversifying manufacturing revenue streams while generating unprecedented value for customers. In this paper, PTC, a global provider of technology platforms and solutions that transform how companies create, operate and service products, looks at changes that are enabling manufacturers to redefine service. PTC commissioned International Data Corporation (IDC), the premier provider of market intelligence, to provide research, analysis and commentary on evolving market dynamics.

Manufacturers redefine service to compete

IDC reports that manufacturers want to capture upward of 30% of revenue from services.[i] This finding indicates that manufacturers want service to provide significant revenue and profitability for their business. A survey sponsored by Salesforce, the customer relationship management software company, further highlights that 74% of manufacturing executives identified service, not new products, as a significant driver of future revenues.[ii]

Fifty billion IoT assets will be deployed in the next five years. These devices will play an essential role in enabling manufacturers to outperform the competition by delivering more sophisticated service offers.

Executives recognize that in order to generate significant revenue, manufacturers must adapt to ever increasing customer expectations. In a report by Salesforce, 92% of executives polled want their organizations to adapt service strategies to better reflect customer needs.[iii]

IDC

IDC sees opportunity in product-service-systems

By 2018, 40% of the top 100 discrete manufacturers and 20% of the top 100 process manufacturers will provide at least some of their portfolio as product-service-systems.[i]

Why are they doing this:

- Increased revenues
- Higher profit margins
- Greater customer satisfaction

In order for manufacturers to drive unprecedented value for their customers and their organization, many are transforming their entire service model and are using the Internet of Things (IoT) as an enabler. This means contextual data, smart assets and analytics are changing the way companies compete. Machine learning, predictive analytics and augmented reality will create even more disruption.

To ignore these technological innovations means not only falling behind the competition but also potentially losing ground until recovery is impossible. In fact, 50 billion IoT assets will be deployed in the next five years. These devices will play an essential role in enabling manufacturers to outperform the competition by delivering information that allows for more sophisticated service offers. With new service models and IoT, the potential for new revenue opportunities is seemingly endless.

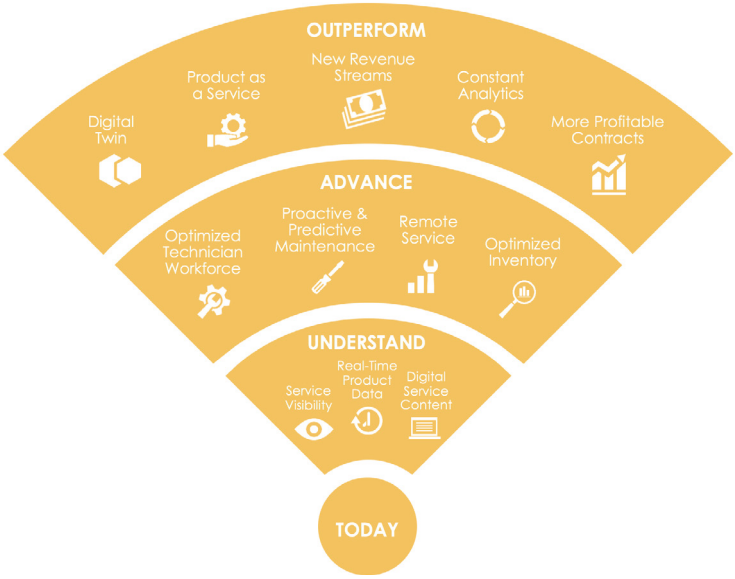
Where to begin

Service transformation cannot be achieved overnight. This journey requires organizations to enable smarter decisions, differentiate service offerings, and completely redefine value for customers and the organization.

The varying service models and levels of maturity and complexity in manufacturing guarantee that there is no one-size-fits-all strategy for transforming service. Instead, each manufacturer must create a plan that aligns to its current challenges and potential opportunities. Where to begin?

PTC offers a framework to evaluate and implement the technologies that enable manufacturers to realize results. The approach consists of three distinct stages:

- Understand
- Advance
- Outperform



IDC

Connected Services offer manufacturers the opportunity to:

- Grow revenues and establish unique business value
- Integrate work processes to support service agility
- Update infrastructure and establish a foundation for connected service

Understand: Make smarter decisions by analyzing service and product data in real-time

The Understand stage involves using visibility of key data to improve efficiency, thereby increasing customer satisfaction. Examples include accessing role-based views of enterprise data, monitoring products remotely, detecting anomalies, and providing technicians and customers with the right up-to-date service and part information digitally. Since these foundational elements can be accomplished with minimal disruption to the service business, it is recommended but not required that manufacturers consider these enablers as the on-ramp for their journey.

Turning Theory into Practice

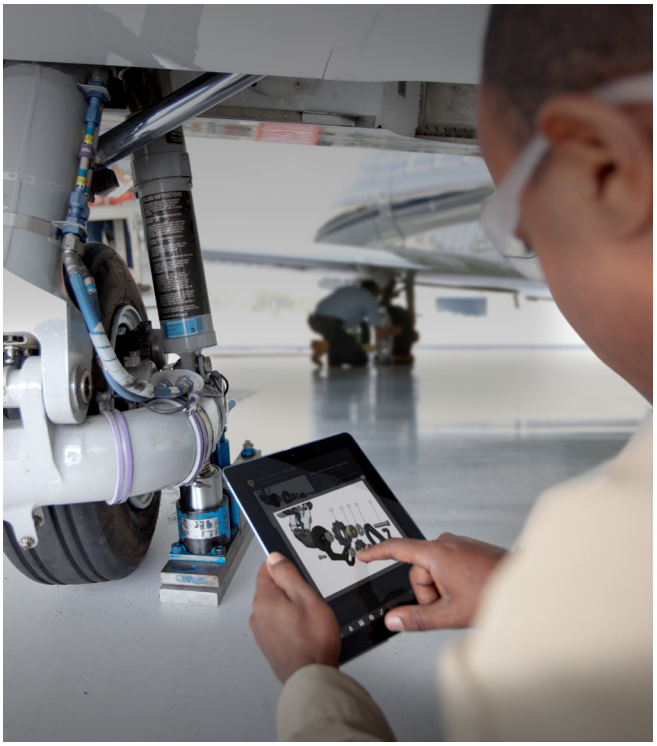
PTC clients like Varian Medical Systems, Lincoln Electric, Diebold, McKinley Equipment, iQor, Trane and Lexmark provide practical use cases for how companies can transform service to avoid commoditization, maximize customer satisfaction and increase revenue.

For example, Trane, a division of Ingersoll Rand, transformed its business model and connected its assets. The result is that for every dollar in equipment sales, upward of 12 dollars in service revenue is realized.

Service visibility: Visualize enterprise data in role-based views and incorporate insights so that service always knows where products are and how they are performing. This visibility enables service to take action and improve processes. Enterprise systems can be complex and designed for other roles and service may need to access several systems simultaneously. Creating simple, role-based views that combine data from multiple enterprise systems minimizes search time, thereby improving service efficiency through improved visibility.

Real-time product data: Monitor products remotely to better anticipate and reduce unplanned downtime. In addition, traditional remote monitoring can be enhanced with the use of edge-based analytics to identify anomalies that typically precede service issues. The result is reduced time for service event resolution.

Digital service content: Ensure technicians and customers can access up-to-date digital service information and part catalogs for seamless identification and ordering. This allows manufacturers to increase service parts revenue through a more efficient experience.



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Getting Started

The paths of entry to providing service through connected products will vary based on the maturity of the existing service strategy within a manufacturer as well as the level of executive support. The key takeaway here is to do something, because there is a sense of urgency around IoT and its impact on after-sales services, customer experience and the product life cycle.

What do manufacturers that understand their businesses look like?

- Varian Medical Systems, manufacturer of integrated cancer therapy systems, is using remote monitoring and access to identify issues and complete repairs without on-site visits. Varian's customers are embracing the strategy and see the availability of lifesaving medical devices improve significantly. Varian's industry reputation is benefiting as well. The company's mean time to respond (MTTR) has decreased by 50% and site visits, costing roughly $2,000 per event, have declined by 42%.
- Lincoln Electric, a global manufacturer of high-quality welding, cutting and joining equipment started by ensuring that parts could be delivered seamlessly to service technicians and customers. With this ease of use, the company decreased service costs by $1.2 million and increased parts revenue by $2 million. The company's next step is to remotely monitor and service its equipment in order to drive additional revenue growth.[iv]

Making smarter decisions through analyzing service and product data in real-time, as Varian Medical Systems and Lincoln Electric have done, allows manufacturers to begin their journey and quickly realize results.

Advance: Differentiate service offerings by improving and expediting the way products are serviced

The Advance stage involves creating competitive differentiation via service plans for proactive service. The results are optimized service parts inventory and the ability to service products remotely. If on-site service is required, products automatically self-schedule. Once technicians are on-site, they can view up-to-date information and experience minimized service parts stock outs. When a technician requires guidance, augmented reality (AR) and virtual reality (VR) support issue resolution while also providing interactive, on-site training.

Optimized technician workforce: Empower technicians to be more efficient with up-to-date content and visual guidance tools such as AR and VR. As product complexity and customer expectations continue to increase, newer technicians struggle to retain knowledge for existing products and keep abreast of product updates. In addition, seasoned technicians may not know the entire service history of every product and customer, especially in a shared service model. Providing up-to-date content and visual guidance tools enable technicians to perform more effectively and efficiently.

Proactive and predictive maintenance: Differentiate your service business by using predictive analytics to drive proactive service and automate scheduling. Use real-time and historical data with machine-based learning to accurately predict issues. Service work then shifts from reactive to proactive and customers experience reduced cost of ownership due to lower maintenance costs and increased uptime.

Remote service: Resolve issues before customers are aware of them. Enable remote service and remote software updates. By using connected products, on-site technician visits are only needed when issues and routine updates can not be handled remotely. This greatly improves customer satisfaction, as on-site visits are resolved in a timely manner and issues can be solved remotely, often before the customer is aware of them.

IDC

From Reactive to Proactive Service

In a recent survey of service leaders, 39% still have a reactive approach to service operations and 38% have adopted a preventative maintenance approach. Proactive service harnesses key machine health information from connected products that can be acted upon before a machine breakdown.

Optimized inventory: Plan parts inventory more effectively to avoid parts-related downtime, multiple site visits and customer frustration. Leverage historical demand, future customer demand and real-time information from connected products to improve forecasting accuracy.

What do manufacturers that advance their businesses look like?

- Diebold Nixdorf (formerly know as Diebold), a provider of self-service terminals and automated teller machines (ATMs), connects ATMs to people and systems for service and support in real-time. Diebold Nixdorf can quickly identify issues and, in some cases, restore service, reducing the need for on-site visits by nearly 17%. When on-site visits are required, Diebold Nixdorf ensures that technicians are dispatched with the required information and spare parts. This enables Diebold Nixdorf to reduce ATM downtime by 15% and decrease average repair time from 3 hours to just 30 minutes.[v]

- McKinley Elevator, a service and solution provider for accessibility lifts, home elevators, dumbwaiters and residential car lifts, uses data from connected products at customer sites to provide remote monitoring services. By combining its field service management solution with connected solutions built on an IoT platform, McKinley is able to deliver industry leading first-time fix rates, safety alerts and issue detection before the customer is aware of a problem. In time, the creative use of tools and solutions will allow McKinley to predict part

failures, provide proactive service and offer outcome-based services such as uptime guarantee contracts. The goal of remote monitoring services is to allow McKinley to differentiate in a way that previously was not possible.[vi]

- iQor, a reverse-logistics provider, uses a knowledge management solution with an IoT platform to capture, in as few steps as possible, the skills that its master technicians intuitively use to resolve issues. iQor is then able to deliver problem-solving tools to newer technicians when they are on-site. This enables iQor to increase workforce efficiency, saving more than $1 million per year.[vii]
- Qantas Airlines Limited, the second oldest airline in the world, forecasts and optimizes inventory to improve accuracy. Employees create product configurations, model probability of maintenance bills of materials (BOMs) and then rebalance materials across the airline's global footprint. This ensures Qantas has enough parts on-hand to maximize fleet availability without overspending on inventory. These efforts reduced supply chain costs by 30% while providing an effective model to apply across Qantas.

Advancing through the use of remote service, optimized technician workforce, optimized inventory, and proactive and predictive maintenance puts manufacturers in a position to further differentiate.

Outperform: Completely redefine value with new service offerings and business models

The Outperform stage involves elevating the relationship with customers from that of a vendor to an integral partner. As the ability to manage risk and guarantee performance becomes more accurate, customers find greater value, thereby extending contracts and building long term relationships. A tightly integrated business model with end-to-end feedback loops is the foundation of the outperforming manufacturer.

Digital Twin: A digital representation of a specific asset in the field, including current and past configuration states, taking into account serialized parts, software versions, options and variants. Condition data is also represented including sensor readings, alerts and operating environments.

IDC

Best Practices for Service Innovation

- Identify profitable use cases that deliver customer value
- Win executive-level support
- Align cross-functional resources
- Identify key technology/service partners and launch initial project

"For every $1 in equipment sales, we have the potential for $12 in the sale of services."

*— **Kevin Bollum**, VP of Building Services and Customer Care, Trane*

Product as a Service: Changes manufacturers' business models from product dominant to customer-centric, based on charging for the use, availability, or outcomes of a product. This allows you to help customers achieve their goals - while expanding your own new revenue opportunities.

New revenue streams: Delivers premium service offerings that only the manufacturer can provide through the analysis of connected data gathered from the customer, then benchmark against groups of comparable customers. These offerings improve the customer's business while generating additional revenue and improved margins for the manufacturer.

Constant analytics: Provides insight into the entire service business and improves both business and asset performance, leading to one or more new revenue streams.

More profitable contracts: Generates and quantifies predictable outcomes and costs to minimize risk which requires a solid understanding of the factors that impact equipment performance and service effectiveness.

To achieve the outcomes above means eliminating traditional service models and tightly integrating isolated business functions. A more unified approach for effectively understanding and anticipating customers' service needs, along with fostering closer coordination between product design and service operations, improves competitiveness, product reliability, parts availability and operational metrics.[viii]

Final thoughts

Product sales are no longer the primary driver of manufacturers' revenue. Today, manufacturers expect service to provide significant profit by meeting customers' expectations for uninterrupted availability and optimal performance through outcome-based offerings. To successfully navigate the journey of service transformation and its ensuing challenges, connected technologies must be implemented, new skills must be learned and methods for providing service must be redefined.

Ultimately, manufacturers who invest in service will reap the compounding benefits of increased revenue, long-term customer relationships and the opportunity to generate unprecedented value for their customers, owners and investors.

Planning for the Service Transformation Journey

In an accompanying document, IDC outlines the essential building blocks and key decisions to optimize and monetize your connected products and service strategy. Expand your view of service transformation by reading the IDC White Paper, sponsored by PTC, *IDC Sees Opportunity in Service Innovation*. Click here to learn more about IDC's perspective on service innovation.

About PTC

PTC has the most robust Internet of Things technology in the world. In 1986 we revolutionized digital 3D design. Now our leading IoT and AR platform and field-proven solutions bring together the physical and digital worlds to reinvent the way companies create, operate, and service products. With PTC technology, global manufacturers and an ecosystem of partners and developers can capitalize on the promise of the IoT today and drive the future of innovation.

i Heather Ashton, *Business Strategy: Market Overview of Service Life-Cycle Management in Manufacturing* (IDC Manufacturing Insights: March 2016).

ii *Salesforce Delivers 2016 Connected Manufacturing Service Report* (Salesforce: March 15, 2016).

iii *Salesforce Delivers 2016 Connected Manufacturing Service Report* (Salesforce: March 15, 2016).

iv *Driving Service and Parts Profitability with Product-Specific Information* (PTC Webcast: May 2015).

v *Resolving Issues and Reducing Downtime* (PTC Case Study, Diebold, Incorporated: 2015).

vi *McKinley Elevator Uses PTC and ServiceMax Software to Compete with Bigger Firms* (PTC Case Study, McKinley Elevator Corporation: March 2016).

vii *How iQor is Using Integrated Solutions and Expert Knowledge to Automate High-Skill Work* (PTC Case Study, iQor: November 2015).

viii James Heppelmann and Michael Porter, *How Smart, Connected Products Are Transforming Companies* (Harvard Business Review: October 2015).

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