



An inevitable shift towards servitization: Machine as a Service



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Executive Summary

The machinery and equipment industry stands at a transformative point, shifting from traditional product sales to service-oriented models. Machine as a Service (MaaS) is leading this change, enabling OEMs to offer equipment through outcome-based, performance-focused contracts rather than outright sales. This shift redefines the manufacturer-customer relationship, with OEMs assuming responsibility for maintenance, uptime, and ongoing technological upgrades, allowing customers to pay for performance over ownership.

Driving forces behind this shift include the complexity of modern machinery, a lengthening equipment lifespan, a skilled workforce shortage, and customers' demand for simplicity and flexibility. MaaS offers an alternative, converting capital expenditures into operational costs, providing businesses with access to cutting-edge technology, predictive maintenance, and data-driven insights without ownership burdens.

For industrial leaders, MaaS enables sustained growth, deeper customer relationships, and a new revenue stream. The service model aligns with circular economy principles, reducing waste and optimizing equipment life through advanced technologies like digital twins and IoT. As digitalization progresses, MaaS represents not just an operational shift but a strategic imperative for staying competitive in an evolving landscape.

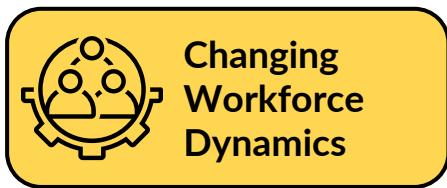
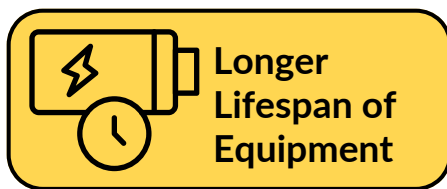
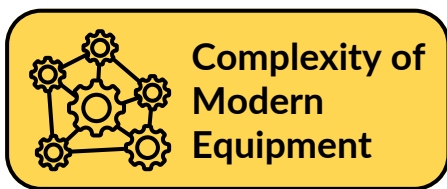


The machinery and equipment industry is at a crossroads, facing a significant shift in how value is created and delivered. For decades, the "build and ship" business model has been the backbone of machinery OEMs (Original Equipment Manufacturers). In this traditional model, once the equipment left the factory, manufacturers had minimal involvement in its operation, performance, or upkeep. But today, that model is fading fast.

Increasingly, manufacturers are recognizing the value of Installed Base Lifecycle Management (IBLM) as a critical differentiator. With machinery now more sophisticated and long-lasting, there is growing pressure on OEMs to offer more than just physical products. Installed Base Lifecycle Management refers to manufacturers leveraging real-time data from their deployed equipment to optimize maintenance, improve functionality, and create new revenue streams by offering performance-based services. Leading companies are already shifting towards a software-defined approach to machinery, separating hardware lifespan from its functional value through the use of data and digital platforms.



Pressure on Traditional Business Models



Several forces are driving the need for this transformation:

1. Complexity of Modern Equipment:

Machinery is more advanced than ever before, incorporating cutting-edge technologies that are harder to understand, operate, and maintain. This complexity demands continuous monitoring and updates, something the traditional "build and ship" model cannot accommodate.

2. Longer Lifespan of Equipment:

Machinery is lasting longer, leading to fleets with a mix of old and new technologies. This poses maintenance and operational challenges, especially when trying to ensure compatibility across generations of equipment.

3. Changing Workforce Dynamics:

The modern workforce is less technically skilled, with reduced maintenance capabilities. Simultaneously, many OEMs are facing a brain drain as experienced employees retire, leaving a talent gap that is difficult to fill.

4. Customer Demand for Simplicity:

Customers today are less concerned with the specifics of the machinery and more focused on reliable performance. They want their equipment to work without needing deep technical knowledge or extensive maintenance teams.

These trends are putting immense pressure on legacy business models that have remained unchanged for decades. Simply selling equipment isn't enough anymore. OEMs are now expected to provide ongoing value, which requires a deeper integration of digital solutions and service-based models like **Machine as a Service (MaaS)**.

MaaS: The Solution

As machinery OEMs grapple with the challenges posed by the traditional business model, **Machine as a Service (MaaS)** is emerging as a transformative solution. MaaS is not just a shift in how equipment is sold or financed; it's a fundamental reimagining of the manufacturer-customer relationship. Under the MaaS model, customers don't pay for the ownership of the machine itself—they pay for the outcome or the performance it delivers.

At its core, MaaS offers manufacturers and their customers a subscription-based or performance-based service. Instead of investing large amounts of **capital upfront (CAPEX)** to purchase machinery, customers pay for the usage or output of the machine over time, transforming the financial structure into an **operating expense (OPEX)**. This shift brings flexibility, cost-efficiency, and access to cutting-edge technology without the burden of ownership.

Why MaaS Matters to Industrial Leaders



Reduced
Capital
Expenditure



Increased
Flexibility



Optimized Maintenance
and Operational Efficiency



Access to
Advanced
Technology



Reduced
investment

For decision-makers in industrial manufacturing, MaaS presents several key advantages:

1. Reduced Capital Expenditure:

Traditional machinery acquisition requires substantial upfront costs. MaaS eliminates these capital expenses, allowing businesses to access the latest equipment without heavy initial investment.

2. Increased Flexibility:

In a fast-evolving technological landscape, companies need flexibility. MaaS provides access to the latest machinery and upgrades without the long-term commitment to a single piece of equipment. This ensures that businesses can adapt to new demands and stay competitive with minimal disruption.

3. Optimized Maintenance and Operational Efficiency:

With MaaS, OEMs bear the responsibility for maintaining uptime and optimizing performance. This focus on reliability ensures that customers experience less downtime, thanks to predictive maintenance and continuous monitoring enabled by AI and ML technologies.

4. Access to Advanced Technology:

Customers who adopt the MaaS model benefit from the latest innovations in machinery and digital technology, without the need for frequent replacements or upgrades. OEMs offering MaaS can remotely update and enhance machine functionality via software upgrades, ensuring customers always have access to the best-performing systems.

5. Reduced investment:

Reduced investment in non-core competencies relating to functional and equipment expertise.

In simple terms, this is the “cloudification” of the equipment market - much like AWS, Google and others transformed the computing equipment market and made in-house data centers obsolete, there will be a new crop of MaaS providers emerging to serve B2B companies in the near future.

The MaaS Landscape

The demand for Equipment-as-a-Service is growing rapidly. According to industry reports, the Equipment-as-a-Service market is expected to reach **\$8.4 billion by 2025**. This growth reflects a broader shift across industries toward as-a-service models, fueled by advances in digital technology, the Internet of Things (IoT), and cloud computing.

For OEMs, MaaS represents more than just a new revenue stream. It creates a deeper, more collaborative relationship with customers, positioning OEMs as long-term partners in their customers' success. By focusing on machine performance and outcomes rather than ownership, OEMs can deliver consistent value while gathering valuable data for continuous improvement.



Equipment-as-a-Service market is expected to reach \$8.4 billion by 2025



Key Features of MaaS

Machine as a Service (MaaS) fundamentally reshapes how manufacturers and customers interact with machinery. By shifting the focus from ownership to service delivery, MaaS aligns machine performance with business outcomes, creating new opportunities for both cost efficiency and operational flexibility. Below are the key features that drive the adoption of MaaS and their importance to the machinery industry.

1. Performance-Based Payment:

Performance-based payment models are driving new revenue streams for OEMs, particularly through **Installed Base Lifecycle Management**. Many machinery executives believe that installed base management will generate significant value by adding new service-based revenue. For example, semiconductor company **ASML** expects its **Installed Base revenue to grow at a compound annual rate of about 12%, reaching over \$6.42 billion in 2025, up from just under \$4.28 billion in 2020**. This demonstrates the financial viability of performance-based models, where manufacturers can capitalize on ongoing equipment service and performance.

Additionally, **Trumpf's pay-per-part model** offers a real-world example of performance-based payment. Under this model, customers pay for each part produced by the machinery instead of purchasing the machine outright.

Installed Base revenue to grow at a compound annual rate of about 12%, reaching over \$6.42 billion in 2025, up from just under \$4.28 billion in 2020

Trumpf even rents its engineers and mechanics to customers, reducing their need for in-house employees while gathering valuable data on machine performance. The result is a more efficient use of materials, with Trumpf reporting a **reduction in carbon-dioxide emissions by up to 65%** under this model, showcasing the environmental and operational benefits of such a performance-based approach.

2. Focus on Uptime and Output:

MaaS emphasizes ensuring machine uptime and output, with technologies such as **digital twins** playing a critical role in predictive maintenance. Those that use digital twins—virtual representations of machinery—are gaining a competitive edge. **The overall market for digital twins is expected to grow tenfold, from \$10 billion in 2023 to \$110 billion in 2028.** The development of digital twins for predictive maintenance is expected to be one of the most widely adopted applications, allowing manufacturers to minimize downtime by anticipating maintenance needs before breakdowns occur.

One example of the power of digital twins is **Caterpillar**, which uses this technology for its next-generation excavators. Caterpillar's digital twins optimize cooling and monitor performance over the entire lifecycle of the machine, helping to reduce energy usage and improve overall machine efficiency.

The overall market for digital twins is expected to grow tenfold, from \$10 billion in 2023 to \$110 billion in 2028

3. CAPEX to OPEX Transformation:

MaaS also enables a shift from capital expenditure (CAPEX) to operational expenditure (OPEX), allowing customers to spread costs over time and reduce the upfront financial burden of acquiring machinery. This transformation is especially attractive as the commoditization of machinery squeezes OEM revenues. Moving to service-based models offers companies a way to improve efficiency, resource resilience, and customer loyalty while providing clients with a lower cost of ownership. As businesses adopt MaaS, they can benefit from ongoing technological upgrades and flexible usage, without the risks and costs associated with outright equipment purchases.

4. Predictive Maintenance and Reliability

A key advantage of MaaS is its integration of **predictive maintenance** capabilities. Instead of reacting to machine failures after they happen, OEMs use advanced data analytics and AI to predict maintenance needs before problems occur. **Emerging leaders in Installed Base management are creating centralized industrial cloud platforms or partnering with established Installed Base Intelligence Platforms**, enriching their digital twins with additional data, and using advanced analytics to derive commercial benefits throughout the product lifecycle. This proactive approach to maintenance improves machine reliability, minimizes unexpected downtime, and reduces overall maintenance costs.

5. Data-Driven Insights for Continuous Improvement

One of the most valuable aspects of MaaS is the continuous stream of data it generates from connected machines. This data provides OEMs with actionable insights to optimize performance, identify inefficiencies, and improve machine design over time. For example, **Remanufacturing**—a process closely tied to data-driven insights—is **expected to reduce costs by 20% to 60%**.

Data also plays a crucial role in supporting circular business models, where the goal is to preserve assets at their maximum value for the longest possible time. IoT data gathered from connected machines creates vast opportunities for improving energy efficiency and reducing the need for new resource extraction. Without a circular strategy supported by data, extending the lifespan of machines and retrofitting them would be far less effective. OEMs adopting circular models through MaaS are finding new ways to reduce material waste while driving sustainability.

Remanufacturing—a process closely tied to data-driven insights—is expected to reduce costs by 20% to 60%

Benefits for MaaS: Customers and OEMs

Benefits for Customers	Benefits for OEMs
<p>Lower Upfront Costs and Financial Flexibility:</p> <ul style="list-style-type: none"> • Eliminates the need for large capital expenditures (CAPEX). • Payments are spread out as operational expenditures (OPEX), preserving capital for other strategic investments. • Customers are not burdened with risks related to equipment depreciation or obsolescence. 	<p>Recurring Revenue Streams:</p> <ul style="list-style-type: none"> • Shifts from one-time sales to a predictable, recurring revenue stream. • Provides stable cash flow and long-term customer relationships. • Taps into the growing demand for service-based solutions.
<p>Access to Cutting-Edge Technology:</p> <ul style="list-style-type: none"> • Continuous access to the latest machinery and technologies without the need for ownership. • Regular software and technology updates improve machine functionality over time. 	<p>Stronger Customer Relationships:</p> <ul style="list-style-type: none"> • Transforms OEMs from transactional vendors into long-term strategic partners. • More opportunities for collaboration and delivering value-added services, fostering customer loyalty.

Benefits for Customers	Benefits for OEMs
<p>Guaranteed Uptime Through Predictive Maintenance:</p> <ul style="list-style-type: none"> • Predictive maintenance ensures equipment stays operational, reducing costly downtime. • AI and data analytics allow OEMs to monitor machine health, ensuring optimal performance. 	<p>Differentiation Through Value-Added Services:</p> <ul style="list-style-type: none"> • Offers a higher level of service, such as predictive maintenance and, setting OEMs apart in commoditized markets. • Differentiation through comprehensive service offerings beyond machinery sales.
<p>Flexibility and Scalability:</p> <ul style="list-style-type: none"> • Scales machine usage up or down based on business needs, without long-term ownership commitments. • Customers can tailor their service contracts and only pay for what they use. • Especially valuable in industries with fluctuating production volumes. 	<p>Data-Driven Insights for Product Improvement:</p> <ul style="list-style-type: none"> • Collects data from deployed machines, providing insights into real-world usage. • Continuous product improvement based on data-driven insights, helping OEMs optimize machinery performance and better meet customer needs.

MaaS and the Future of Manufacturing

The future of manufacturing is intertwined with the concept of **Machine as a Service (MaaS)**, where machinery is no longer just a product but a solution-driven, data-powered service. MaaS is not merely a financial innovation—it is a strategic shift that redefines how businesses think about machinery, operations, and sustainability. As industries across the globe embrace digitalization, MaaS stands at the forefront of this transformation, enabling manufacturers to stay competitive, agile, and customer-centric.

MaaS: A Key Driver of the Circular Economy

MaaS plays a pivotal role in promoting the **circular economy**, where the focus is on extending the lifecycle of machines and optimizing resource use. With predictive maintenance, OEMs can ensure that machinery is always operating at peak efficiency, reducing waste, and limiting the need for new material extraction. This sustainable approach aligns perfectly with growing environmental regulations and the increasing demand for eco-friendly business practices.

Connected machines, powered by the Internet of Things (IoT) and digital twins, allow OEMs to offer continuous upgrades and retrofits to equipment, preserving their value for longer periods. As more companies adopt circular strategies, MaaS will play a crucial role in minimizing environmental impact while maximizing financial returns.

Advancements in Technology

The future of MaaS is closely tied to advancements in technology, particularly in areas like AI, machine learning, and IoT. These technologies, along with **Installed Base Intelligence (IBI)**, will enable OEMs to offer real-time monitoring, instant performance upgrades, and seamless predictive maintenance.

Installed Base Intelligence plays a crucial role by leveraging data from a manufacturer's deployed equipment, allowing OEMs to optimize machine performance and provide insights throughout the entire lifecycle. IBI not only supports predictive maintenance but also enhances the customer experience by delivering data-driven recommendations for performance improvements. This makes IBI a key enabler of the MaaS model, as it ensures machines operate at peak efficiency while also extending their life through intelligent insights and proactive service.

The rapid growth of **digital twins**—virtual representations of physical machines—will be one of the most transformative technologies within MaaS. By continuously analyzing data from real-world operations, combined with insights from IBI, digital twins will allow manufacturers to simulate machine performance and optimize outputs without disrupting production. This level of insight and control is critical to ensuring that MaaS delivers on its promise of reliability and operational excellence.

Customer Acceptance and OEM Adoption

While the benefits of MaaS are clear, its widespread adoption hinges on two factors: **customer acceptance and OEM investment**. Customers need to embrace the idea of shifting from ownership to service-based models, trusting OEMs to deliver on performance and uptime guarantees. Likewise, OEMs must invest in the digital infrastructure required to support MaaS, including cloud computing, data analytics, Installed Base Intelligence, and cybersecurity.

As more companies demonstrate success with MaaS, its appeal will grow. Early adopters will benefit from the agility, efficiency, and flexibility that MaaS provides, while laggards risk being left behind in an increasingly service-oriented manufacturing landscape.

Reference links

Data Pointer/Insight	Source URL
Equipment-as-a-Service market expected to reach \$8.4 billion by 2025	<ul style="list-style-type: none"> • https://blogs.cisco.com/manufacturing/embracing-machine-as-a-service-transforming-manufacturing • https://www.exorint.com/en/x-platform-content-hub/what-is-the-machines-as-a-service-business-model-or-maas
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