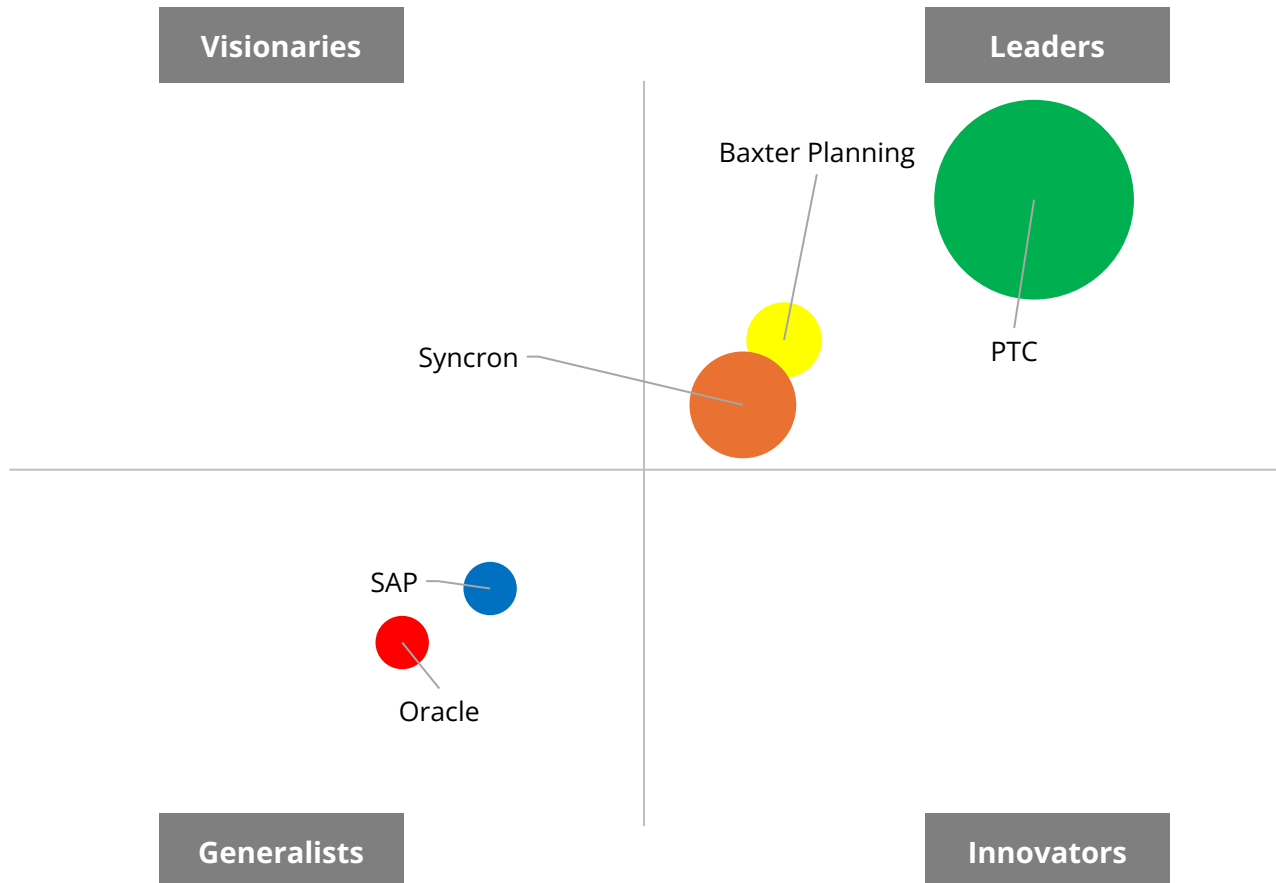# SPARE PARTS MANAGEMENT SOFTWARE STATE OF THE ART BENCHMARK EVALUATION – 2025 EDITION

Blumberg Benchmark Evaluation Figure

Unique Characteristics of Spare Parts

Spare parts play a critical role in sustaining aftermarket services, serving as both a significant revenue source and a mechanism for resolving service issues. These parts contribute between 10% and 20% of a manufacturer's overall revenue and can account for as much as 30% to 50% of profits. However, managing spare parts is inherently complex due to their unpredictable and intermittent demand, which is influenced by equipment usage, failure rates, and environmental factors. Unlike traditional inventory, spare parts are often repairable and reusable, adding complexities related to reverse logistics and lifecycle planning. Organizations must adopt circular supply chain strategies that optimize repair cycles, minimize waste, and extend part lifecycles while balancing financial performance metrics like Return on Assets (ROA) and Return on Invested Capital (ROIC).

Reliability requirements and performance metrics such as equipment uptime, fill rates, and first-time fix rates further constrain spare parts management. Accurate predictions of Mean Time Between Failures (MTBF) and Remaining Useful Life (RUL) are essential for proactive maintenance and minimizing costly downtime. Adding to the challenge is the structure of spare parts networks, which often span multi-echelon supply chains – including central warehouses, regional centers, and forward stocking locations – and multi-indenture product hierarchies. Managing inventory across these layers requires advanced tools capable of accounting for interdependencies between components and locations to optimize stocking strategies and ensure service continuity.

Modern spare parts management increasingly integrates AI/ML-driven solutions to address these complexities. Advanced forecasting models analyze operational data, equipment usage, and external triggers to predict demand, while tools like digital twins simulate supply chain scenarios for strategic planning. AI capabilities also enable sustainable practices by reducing overstock, optimizing reverse logistics, and promoting repair and reuse to minimize carbon footprints. Given the high stakes of service availability and financial efficiency, the Just-in-Case approach has replaced traditional Just-in-Time techniques. This underscores the need for industry-specific, AI-powered solutions that balance inventory optimization, operational resilience, and sustainability.

Impact of Trends on Spare Parts Management

Several emerging trends drive manufacturers and service providers to focus more intently on Spare Parts Management (SPM), as it becomes a linchpin for revenue generation, operational efficiency, and customer satisfaction. One of the most transformative trends is the Servitization of products, where companies shift from selling products alone to offering services that generate recurring revenue. The sale of spare parts is often an early step in this journey, requiring organizations to master parts planning, forecasting, and inventory management to balance uncertain demand while minimizing costs. As businesses mature in their servitization efforts, they increasingly monetize their installed base through advanced, value-added services like vendor-managed inventory and pay-per-use models. These services elevate the importance of optimal spare parts management because delays or stockouts can severely impact service performance, leading to missed SLAs, financial penalties, and diminished profitability.

A second, equally critical trend is the rise of the circular economy, where value is derived by repurposing, repairing, and recycling products and components. In the aftermarket, this involves replenishing spare parts inventory through refurbishing, repairing, and reusing defective parts. While this strategy supports sustainability goals and reduces costs, it introduces additional complexities for service parts planners. They must account for factors such as repair cycle times, refurbishing lead times, and availability of returned parts, which influence inventory optimization and planning scenarios. AI and machine learning tools are becoming increasingly vital to manage these dynamics, enabling planners to model, forecast, and integrate reverse supply chain activities seamlessly into overall inventory strategies.

The most impactful trend reshaping spare parts management is the wave of new technologies enabling digital transformation. Innovations such as IoT connectivity, machine learning (ML), artificial intelligence (AI), and 3D printing are revolutionizing service supply chain operations. IoT enhances demand forecasting by providing real-time equipment usage and performance data, enabling predictive maintenance and just-in-time parts allocation. AI and ML algorithms improve decision-making accuracy for inventory optimization, failure rate predictions, and parts lifecycle planning. Meanwhile, 3D printing creates opportunities to produce parts on demand, reducing lead times and storage costs. These technologies elevate operational efficiency, reduce costs, and deliver customers a seamless, "Uber-like" service experience. As a result, organizations are increasingly adopting purpose-built, AI-driven tools to improve their spare parts management processes' precision, reliability, and agility.

Spare Parts Management: State of the Art

In today's competitive landscape, an effective Spare Parts Management (SPM) solution must incorporate advanced capabilities that align with business objectives and emerging technologies. Below are the **core functionalities** companies should prioritize when investing in an SPM solution:

- **Demand Forecasting**: Demand Forecasting is critical for predicting spare parts usage, especially in environments with intermittent and low-volume demand patterns. Modern SPM systems incorporate statistical models and AI/ML techniques to identify demand trends and anomalies. They leverage historical data, IoT-driven real-time equipment usage, and predictive analytics to improve accuracy. This enables organizations to proactively address fluctuations, new product introductions, and parts lifecycle phases to minimize excess stock or shortages.

- **Inventory Optimization**: Inventory Optimization ensures the right parts are stocked at the right locations to meet service goals while balancing costs. Using advanced optimization techniques like Multi-Echelon Optimization (MEO) and stochastic modeling, SPM systems determine ideal stocking levels across a global service network. The system analyzes variables like lead times, part criticality, and location-specific constraints to minimize safety stock and excess inventory while maximizing service levels.

- **AI/ML Integration**: AI/ML Integration incorporates Artificial Intelligence (AI) and Machine Learning (ML) technologies into SPM processes. AI/ML capabilities enable systems to automate workflows, improve demand forecasting precision, identify anomalies, and optimize decision-making. For example, machine learning models can predict Mean Time Between Failures (MTBF), recommend forecast adjustments and analyze planner overrides for continuous improvement. By integrating AI, SPM systems evolve from reactive to predictive and proactive management.

- **Lifecycle Planning**: Lifecycle Planning involves managing spare parts across all phases, including new product introduction, peak usage, and end-of-life (EOL). SPM solutions use predictive analytics to plan for Last-Time-Buy scenarios, anticipate parts obsolescence, and optimize repair-and-reuse strategies. Lifecycle planning ensures that spare parts inventories are aligned with product support needs throughout their operational life, reducing obsolete inventory and avoiding downtime.

- **Sustainability**: Sustainability in SPM focuses on reducing environmental impact while maintaining operational efficiency. Modern systems enable sustainability by optimizing inventory to minimize waste, supporting reverse supply chains for repair and reuse, and tracking carbon costs. AI-driven sustainability models help organizations align inventory management decisions with carbon reduction goals, promote circular supply chains, and reduce embodied emissions from production and logistics.

- **Advanced Capabilities**: Advanced Capabilities refer to features that extend beyond traditional SPM functionalities. These include interactive dashboards, real-time analytics, multi-dimensional optimization models, and advanced simulation tools like Monte Carlo analysis. Features like Generative AI integration, real-time IoT data incorporation, and predictive twins empower organizations to address complex supply chain challenges with precision and scalability.

The capabilities outlined above represent essential building blocks for a robust SPM solution. Companies investing in SPM software must evaluate how effectively a solution can model complex supply chain scenarios, leverage AI-driven insights, and address sustainability challenges to achieve business objectives. The depth of integration between demand forecasting, inventory optimization, and lifecycle planning determines how well the system can adapt to industry-specific requirements and evolving spare parts dynamics.

Additional Considerations for Selecting an SPM Solution

When evaluating a Spare Parts Management (SPM) solution, ensuring the software is purpose-built for Aftermarket Service Supply Chains is crucial. Solutions initially designed for manufacturing or retail environments often fail to address the unique challenges of service supply chains, such as intermittent demand, parts obsolescence, and multi-echelon inventory networks. A purpose-built SPM solution, by contrast, incorporates tailored capabilities like advanced demand forecasting, lifecycle planning, and reverse logistics, which are essential for optimizing service parts performance. Additionally, selecting a vendor with deep vertical market expertise – in industries like aerospace, automotive, or industrial equipment – ensures the solution can address sector-specific complexities, regulatory requirements, and operational goals. Vendors with proven success in a given industry bring pre-configured templates, best practices, and insights that accelerate implementation and deliver measurable results.

Another critical factor is the credibility and reliability of the system's planning models. Buyers should seek solutions whose forecasting and optimization methodologies have been independently validated by trusted third-party organizations, demonstrating their ability to deliver consistent and accurate results in real-world scenarios. This validation ensures confidence that the system will perform as expected under the complexities of a specific industry. Equally important is the solution's ability to integrate emerging technologies like IoT-driven demand forecasting, Generative AI, and predictive analytics. Vendors committed to innovation can future-proof their offerings, ensuring the solution evolves to address changing market dynamics, new data sources, and sustainability goals. Finally, organizations should consider the vendor's stability and focus, including years of experience, revenue attributable to SPM, and investment in ongoing research and development. These factors indicate the vendor's long-term commitment to advancing SPM capabilities and delivering value over time.

Vendor Profiles

This section provides a profile of each vendor evaluated for inclusion in this report. We have assessed each vendor against the feature functionalities and capabilities described above. The profiles also include analyst commentary on each vendor's relative strengths and weaknesses related to these criteria.

PTC

Overview

PTC's service parts management solution, Servigistics, is a global leader in service supply chain optimization with over 30 years of expertise in optimizing service supply chains. Headquartered in Boston, Massachusetts, the company serves industries with complex service needs, including aerospace, defense, commercial airlines, automotive, medical devices, electronics and high-tech, industrial equipment, and manufacturing. Its solutions enable organizations to reduce costs, improve service levels, and streamline their supply chain operations.

With a strong global presence, Servigistics operates extensively in North America, Europe, and Asia-Pacific. The company's diverse customer base includes large and medium-sized enterprises, demonstrating its ability to cater to varied operational scales and industry requirements.

Core Competencies

Servigistics distinguishes itself with a robust application of Artificial Intelligence (AI) and Machine Learning (ML) to transform service parts management. The platform offers advanced predictive analytics, enabling precise demand forecasting by leveraging historical and causal data, such as asset activity and utilization patterns. This capability is particularly effective in predicting sporadic or intermittent demand, a common challenge in service parts planning.

Another standout feature is Multi-Echelon Optimization (MEO), which holistically optimizes inventory levels across all supply chain tiers. This capability ensures that safety stock is minimized without compromising service levels, significantly reducing costs. Additionally, the platform supports comprehensive lifecycle planning, enabling organizations to manage new product introductions, end-of-life planning, strategic planning, simulation, sustainability, and last-time buy scenarios efficiently.

Servigistics also provides real-time inventory and supply chain performance visibility, seamlessly integrating with enterprise resource planning (ERP) systems and Internet of Things (IoT) platforms. This integration ensures planners and executives have actionable insights to make informed decisions quickly. The solution is highly scalable and adaptable, making it suitable for organizations of varying sizes and complexities, holistically optimizing every tier of the service supply chain from the central warehouse through dealers. For example, Servigistics customers consistently outperform other OEMs when benchmarked on critical KPIs like inventory reduction, availability, equipment uptime / readiness, and sustainability, and do so with lean, efficient planning teams.

Unique Attributes

Servigistics excels in technological innovation through its advanced AI and ML algorithms. These technologies power predictive maintenance, supply chain optimization, and dynamic demand forecasting, offering organizations a competitive edge. The platform's proprietary MEO framework is particularly notable, as it addresses the challenges of multi-echelon supply chains with unparalleled efficiency and precision.

Another strength of the platform is its adaptability. Servigistics allows businesses to tailor workflows, dashboards, and planning processes to meet their unique requirements. This flexibility ensures organizations can align the solution with their current operational goals and strategies. Servigistics' advanced capabilities empower OEMs with continuous improvement, fine-tuning the system and adjusting for unpredictable supply chain influences.

Strategic partnerships with IoT, reverse logistics, and analytics providers enhance the company's extensive ecosystem, broadening the platform's capabilities and enabling end-to-end solutions. Namely, OnProcess, an Accenture Business, Microsoft, Capgemini, Trax, Tech Mahindra, and many more. Customer success stories further underscore its impact. For instance, an aerospace and defense leader achieved the same service levels with 35% less inventory. In comparison, an automotive leader reduced inventory by 26.8% and reached a service level of 98%, and clients experienced a 900% return on investment. These examples highlight the tangible benefits and ROI delivered by Servigistics.

Key Considerations

One of the primary strengths of Servigistics is its leadership in AI/ML-driven service parts management. The platform's advanced capabilities have consistently delivered measurable ROI, including inventory reductions and improved service levels. Additionally, the company provides comprehensive training and

support resources, ensuring customers can fully leverage its functionality. It operates a well-organized customer advisory group that knits together a strong community of client, partner, and Servigistics thought leaders.

However, the platform's depth and complexity may pose challenges for smaller enterprises. Servigistics' clients include some of the largest service supply chains in the world, like the US Air Force, Boeing, Airbus, Kone, Philips, VW Group, Komatsu, HP, and more. Servigistics enables these organizations to handle the immense complexity inherent in their service parts supply chain. Organizations with less than $20 M in service parts inventory could experience less dramatic results from Servigistics' advanced capabilities due to the small size of the service parts network. Servigistics' Professional Services team and a collection of experienced partners offer cost-effective implementation options and help augment varying levels of client maturity. Servigistics' SaaS customers benefit most from the efficient use of technical resources, effectively reducing the reliance on internal IT resources.

Financially, Servigistics is a stable and profitable organization with consistent revenue growth and a strong commitment to AI/ML innovation, and its results are accretive to PTC. PTC is a stable and growing multi-billion-dollar tech company, offering valuable resources to the Servigistics team, clients and partners. Servigistics offers the greatest potential for cost savings and operational improvements among the available vendors in the market, making it a compelling choice for organizations seeking best-of-breed capabilities to achieve high returns.

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FUNCTIONAL COMPARISON OF VENDORS

Legend: PTC · Baxter Planning · Oracle · SAP · Syncron
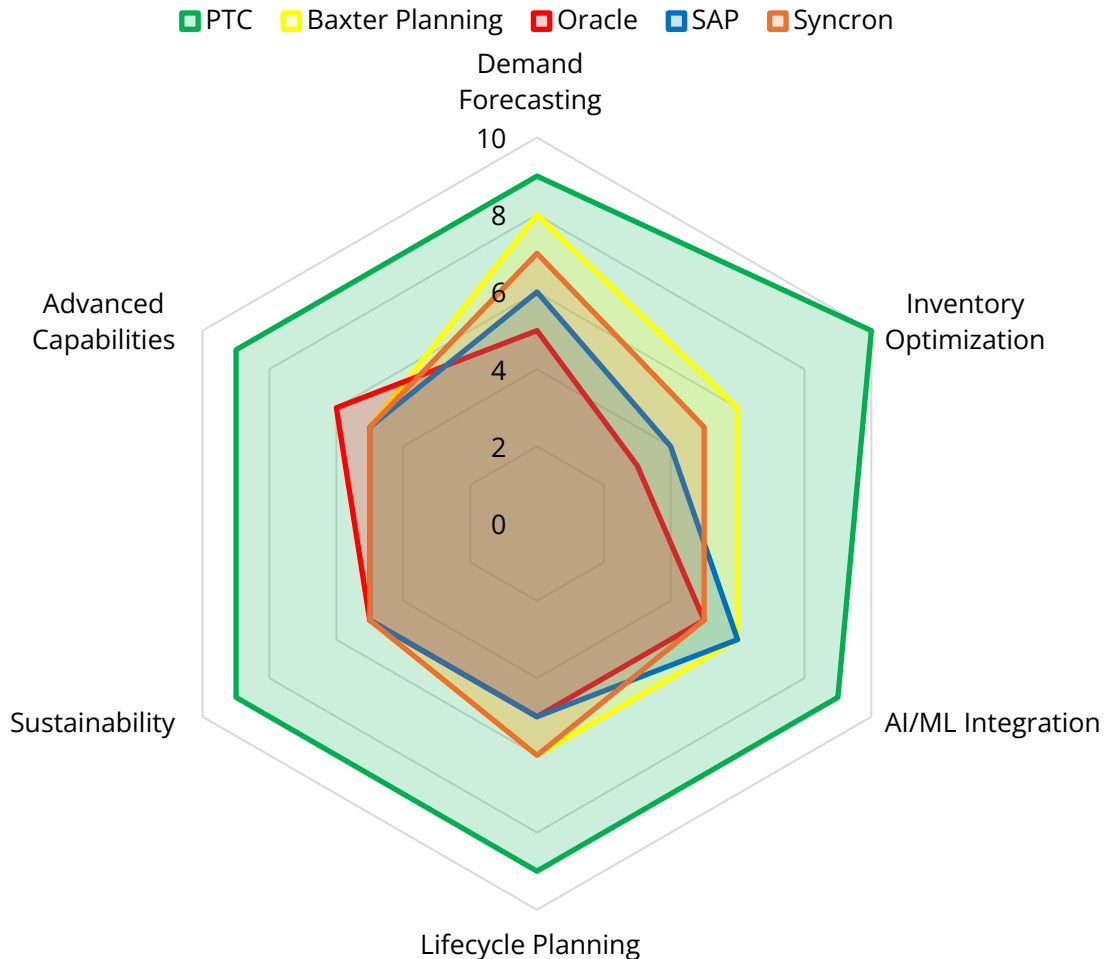
Appendix

Reading the Blumberg Service Parts Management (SPM) State of the Art Benchmark Evaluation Graphs

For this analysis, Blumberg divided potential key measures for success into two primary categories: Solution Maturity and Strategic SPM Alignment.

Positioning on the Y-axis (Solution Maturity) assesses the robustness of each vendor's product capabilities, including feature functionality, optimization approach, demand forecasting, AI/ML integration, ease of use, and flexibility. Vendors positioned higher demonstrate stronger, mature solutions that incorporate innovations in AI/ML to effectively address the service parts planning needs within organizations that operate complex service supply chains.

Positioning on the X-axis (Strategic SPM Alignment) measures each vendor's ability to meet current and emerging market needs, reflecting their expertise, market focus, and innovation. This includes the

vendor's understanding of complex supply chains, industry vision, and ability to align their solution to evolving business requirements.

The Blumberg SPM Benchmark Analysis's vendor markers represent each vendor's estimated market share and revenue within the Spare Parts Management software market.

In this study, vendors ended up in either the Leaders, Visionaries, Innovators, or Generalists categories because they could deliver to the varied needs and processes of Service Supply Chain issues across various vertical market segments and use cases.

In addition to the vendor positioning chart, Blumberg evaluated the product functionality of each vendor's solution against key requirements for supporting forecasting, planning, and optimization within large, complex service supply chains. Our assessment focused on several critical areas: Demand Forecasting, Inventory Optimization, AI/ML Integration, Lifecycle Planning, Sustainability, and Advanced Capabilities. For definition purposes, a large complex service supply chain is characterized by a high volume of SKUs, multiple locations, and numerous echelons. We used a rating scale of 1 to 10, where 1 equals low and 10 equals excellent.

Objectives

In conducting this study, Blumberg set out to update its evaluation of Service Parts Management (SPM) solutions to reflect advancements in Artificial Intelligence (AI) and Machine Learning (ML) and their impact on vendor capabilities. This report is an independent benchmark evaluation designed to help Service Supply Chain Executives understand the strategic value of AI-driven SPM solutions in improving financial and operational performance. By defining the core feature-functionality of state-of-the-art solutions, the study enables a more transparent comparison of vendors based on key criteria, including demand forecasting, inventory optimization, AI/ML integration, lifecycle planning, sustainability, and advanced capabilities. This analysis highlights each vendor's strengths, innovation roadmaps, and ability to address the growing complexity of service supply chains. It gives service leaders the insights to make informed, strategic decisions aligning with their organizational goals.

Methodology

Vendors selected for inclusion in this report were based on Blumberg's knowledge of the SPM market and well-researched judgment about specific vendors. Blumberg relied on various data sources to develop vendor profiles, evaluations, and comparison scores. These sources included reviewing publicly available information, whitepapers and literature, structured discussions and data collection processes with vendors, and interviews with thought leaders, industry consultants, and end-users.

Definitions

For inclusion in this report, vendors had to meet the following definition of Spare Parts Management: A software solution that contains critical feature functionalities to forecast, plan, and manage spare parts demand, inventory stock levels and locations, and replenishment orders. Additionally, these activities must occur within the context of operating an aftermarket service supply chain. Concerning specific evaluation criteria related to vendor capabilities, the following definitions were utilized:

- **Feature Functionality**: Measures the breadth and depth of the software's core capabilities, including demand forecasting, inventory optimization, lifecycle planning, and advanced SPM processes such as multi-echelon optimization and asset availability management.

- **User Experience and Usability**: This evaluates the system's interface design, ease of use, flexibility, and configurability. It also considers the learning curve, level of training required, and overall user experience.

- **Customer Support and Service**: Assesses the quality and availability of technical support, training resources, implementation services, and the vendor's ability to assist customers in achieving success and maximizing value.

- **Scalability, Flexibility, and ROI**: This section examines the system's ability to scale with business growth, adapt to changing operational requirements, and deliver a strong return on investment (ROI) by improving performance, reducing costs, and achieving measurable financial outcomes.

- **AI/ML Innovation and Roadmap**: Considers the extent of **AI and Machine Learning (ML)** integration within the solution, current capabilities such as predictive analytics and autonomous planning, and the robustness of the vendor's roadmap for future AI/ML advancements.

- **Security and Compliance**: Evaluate the software's adherence to industry data security, privacy, and compliance standards. This includes certifications (e.g., FedRAMP, SOC 2), encryption capabilities, and data protection measures.

- **Vendor Stability and Reputation**: Assesses the vendor's financial strength, longevity, market presence, and proven ability to deliver effective SPM solutions. It includes industry recognition, customer satisfaction, and reliability as a partner.

- **SPM Domain Expertise**: Measures the vendor's specialization and experience in Service Parts Management, including the team's expertise, years of focus on SPM, and understanding of the complexities of aftermarket service supply chains.

- **Vision and Market Leadership**: This evaluation evaluates the vendor's ability to innovate and align their product roadmap with emerging market needs, as well as their leadership potential based on technology, customer base, and competitive differentiation.

- **Vertical Market Focus**: Examines the vendor's ability to support various industries and vertical markets. This includes the number of customers in key verticals, the solution's adaptability to market-specific complexities, and overall customer success within those industries.

This report finds definitions related to the functionality of the SPM feature in the Spare Parts Management State of the Art section.

Synopsis

This Blumberg Advisory Group report provides Service Supply Chain Executives with an independent benchmark evaluation of Service Parts Management (SPM) solutions, emphasizing their vital role in improving financial and operational performance. "Spare parts represent the single largest investment and second-largest expense in product service businesses," notes Michael Blumberg, president of Blumberg Advisory Group." "Additionally, industry trends such as Servitization, the Circular Economy, and technological advancements are driving the need for more effective forecasting, inventory management, and replenishment."

The 2025 Service Parts Management Benchmark Study highlights the transformative impact of Artificial Intelligence (AI) and Machine Learning (ML) on SPM capabilities. These innovations advance demand forecasting, inventory optimization, and lifecycle planning, enabling greater accuracy, autonomous decision-making, and improved sustainability outcomes. This report equips service leaders with the

insights needed to make strategic, data-driven decisions in today's evolving service supply chain landscape by evaluating vendor performance and identifying emerging trends.

About Blumberg Advisory Group

Blumberg Advisory Group, Inc. is a leading research and consulting firm in the Aftermarket Service Industry and a pioneer in helping companies operate Service strategically to increase profits. Through market research, benchmarking, and consultant studies, Blumberg helps companies identify, evaluate, and implement technologies to improve the productivity, efficiency, and quality of Field Service and Service Supply Chain operations. Blumberg works to improve company profits through strategic Service, assisting in developing and implementing profitable business strategies based on the principle that Service is optimal when managed as a separate, strategic, and profitable business. Visit http://www.BlumbergAdvisor.com.