

AI-ENABLED SUPPLY CHAIN & PREDICTIVE MAINTENANCE

DRIVE SUPPLY CHAIN EFFICIENCY WITH ARTIFICIAL INTELLIGENCE

TRADITIONAL VERSUS PREDICTIVE MAINTENANCE

Many organizations have difficulty analyzing and forecasting both the near- and long-term supply chain needs necessary to drive equipment availability and readiness. The legacy processes used to collect, prepare, and analyze equipment health data, including manual checklists and data aggregation, are time consuming and prone to errors. Booz Allen Hamilton has developed automated predictive maintenance solutions that use advanced analytics and artificial intelligence (AI) to improve equipment readiness and availability.

Automating data acquisition, preparation, and analysis frees up resources to focus on contextual analysis and taking action, while continually improving the accuracy, cost, and time required to make decisions.

Booz Allen has learned the best way to drive predictive maintenance and supply chain improvement is to ensure informed

communication and decision making through rapid and accurate data acquisition and analysis. Using mobile infrastructure, data engineering, and the latest in AI and analytics, Booz Allen helps leaders gain greater insight into their operations and achieve high performance.

TYPES OF MAINTENANCE



PREVENTIVE
Scheduled and performed regardless of need



REACTIVE
Performed in response to a breakdown event



CONDITION-BASED
Performed when a condition warrants it



PREDICTIVE
Scheduled in response to sensor feedback

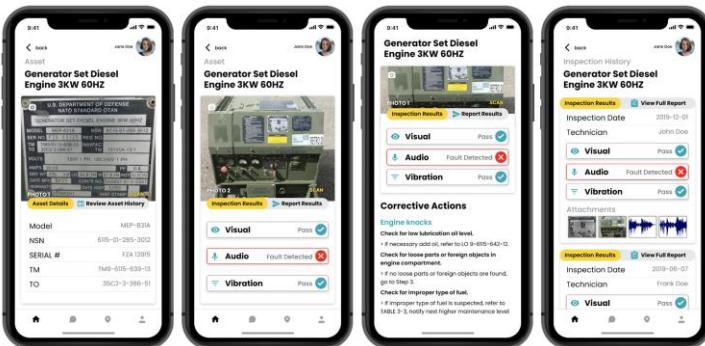
STRUCTURED, TAILORED & CUSTOMIZABLE APPROACH

Acquire and Normalize	The first step is gaining access to data locked in legacy data systems, such as enterprise resource planning (ERP) and lifecycle management systems. Then a data landscape assessment is performed, which ensures any developed process can be calibrated correctly given the unique data landscape. The assessment will highlight risk areas and opportunities for improvement in data management practices needed to continuously improve the algorithms over time. We also assess the opportunity to collect and integrate non-traditional types of data like acoustics, imagery, and vibration into our AI-enabled predictive maintenance processes.
Analyze	The second step combines Booz Allen's data science expertise with the business knowledge of subject matter experts and stakeholders. With this comprehensive knowledge, Booz Allen applies machine learning and decision support algorithms that best align to the organization's mission while enabling automatic algorithm training as the organization improves. Models are validated early and often with stakeholders to develop trust and improve accuracy. Analytical tools are chosen with a focus on open-source technologies to avoid vendor lock-in and optimize software investment, and solutions are designed to be scalable throughout the enterprise.
Act	The final step is using the analytical results to direct stakeholder action, providing real-time visibility into the supply chain. The analysis can be integrated with the organization's business intelligence tools, including both mobile and web-based platforms. This approach ensures consistent, repeatable, and reliable predictions that can be used for real-time scenario planning and analysis, allowing stakeholders to make evidence-based decisions more accurately and at a fraction of the cost and time of legacy systems.

AI-ENABLED PREDICTIVE MAINTENANCE SHOWCASE

Mobile Predictive Maintenance: On-Demand Asset Health Assessment

The mobile predictive maintenance feature detects and diagnoses equipment health easily, accurately, and consistently using AI on a smartphone. Smartphones are used to capture acoustic signatures and imagery to intelligently compare current conditions with normal performance to automatically identify potential issues. This enables maintenance technicians to take immediate action to maintain mission readiness.

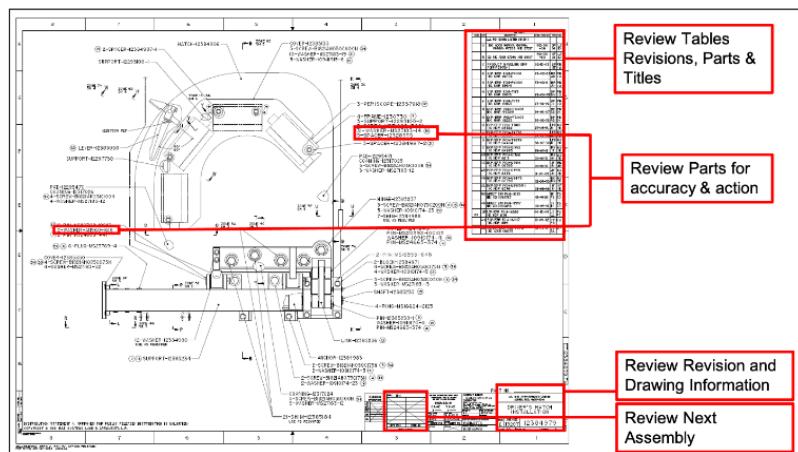


Part Demand Prediction Process

The predictive part demand feature integrates supply chain data sets (operational statistics, failure reports, work orders, and purchase history) to provide AI-based models for understanding future part needs to inform sustainment budget requirements and maintain readiness. Models use future operational tempo estimates to predict part demand and perform scenario comparisons.

Directed Energy Impact Testing

Directed energy impact testing leverages AI/ML to automatically assess the impacts of directed energy attacks on equipment in real time. Through signal processing techniques, this tool helps users understand the size and scale of an attack, under varying test conditions, to better prepare for future operational environments.



Automated Information Extraction Process

Our automated information extraction process uses AI techniques to electronically scan and ingest large volumes of supply chain documentation (like engineering drawings, technical manuals, maintenance literature), then automatically extracts information of interest (like part numbers, supplier information, hazardous materials) into user defined formats. The process produces more accurate results, reducing time of analysis from months to minutes.

About Booz Allen

Booz Allen is the premier digital integrator for the Department of Defense, blending decades of mission experience with state-of-the-art AI/ML, next-generation data solutions, networking, cyber, and advanced software development to help DOD achieve information dominance. We bring our defense clients the best emerging technology to help them quickly and easily modernize, achieve interoperability, and win.

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