

## Reimagine Industrial Maintenance

SparkPredict<sup>®</sup> is a leading predictive analytics solution for industrial operations managers and subject matter experts (SMEs) that uses machine learning to deliver valuable asset behavior insights for predictive maintenance. With SparkPredict, industrial operators reduce unexpected downtime, accelerate diagnostic processes, and adapt to long-term asset behavior changes.

**FIGURE 1**  
Industrial Use Case Examples and Observed Results

POWER GENERATION	OIL AND GAS	WIND FARM
Compressors   Turbines   HRSG   Generators	ESPs   Compressors   Fracking Rigs	Gearboxes   Generators
<b>Problems:</b> Highly sensitive assets with rare labeled failures are complex and critical to protect	<b>Problems:</b> Downtime causes significant productivity losses that are difficult and costly to repair	<b>Problems:</b> Suboptimal operations and long repair lead times leave wind assets underutilized
\$500K+ Cost Avoidance	70-80% Predictive Accuracy	20X Advance Failure Warning

## Empower Subject Matter Experts

SparkPredict uses sensor data and advanced machine learning to approximate subject matter expertise and prioritize meaningful information. This means SMEs tasked with investigating alarms can focus their attention on what is most important and make more informed decisions.

### Advanced Predictive Insights

- Uses supervised and unsupervised learning to indicate machine failure through normal behavior modeling (indexed risk) or clustering (event/anomaly detection)
- Data-derived machine learning models consistently outperform heuristics, rules-based, and statistical models

### Explainable Outcomes

- Exposes and prioritizes the key features contributing to anomalous behavior and offers evidence for the outcomes
- With this information, SMEs can reduce false positives from sensor issues and drive targeted investigation

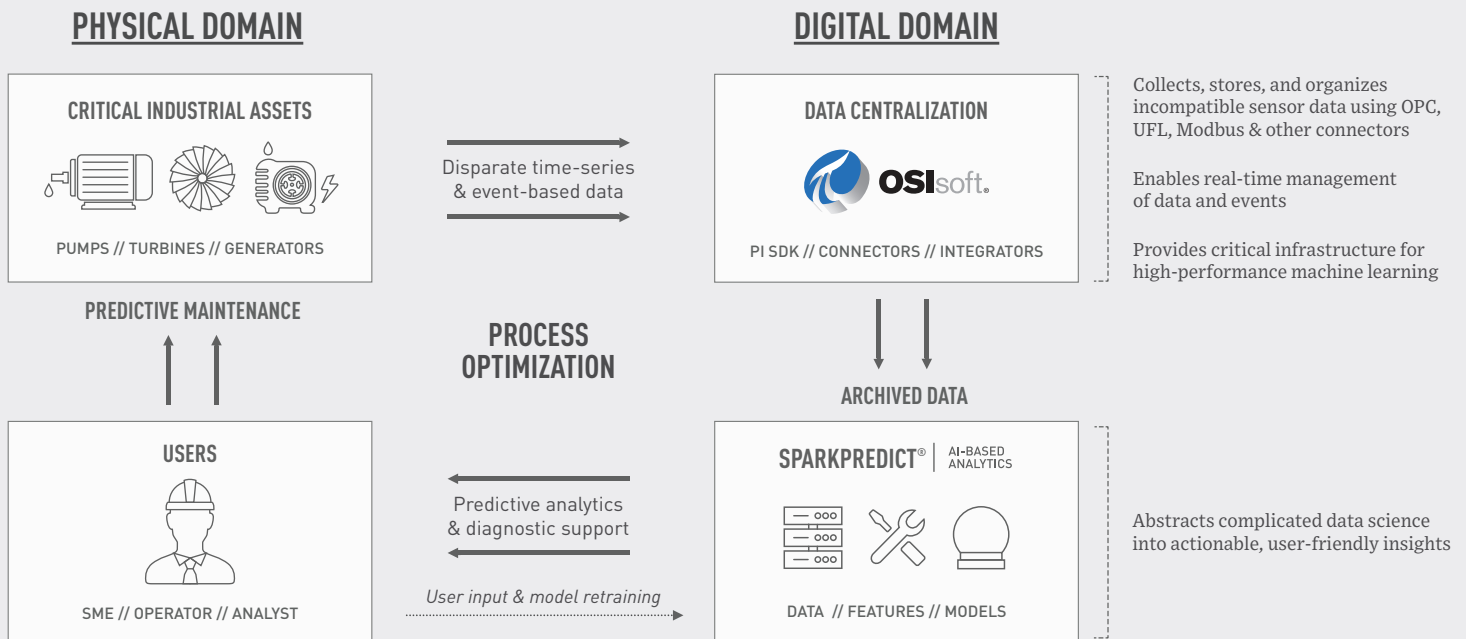
### Continuous Learning

- Incorporates real-time data and SME anomaly classification into the solution which adapts to changing asset behavior and improves performance over time
- Simplified UI-based model retraining minimizes the manual effort spent maintaining the predictive models and reduces long-term TCO

**FIGURE 2**  
Key Features

	DEPLOYMENT	MACHINE LEARNING	EVENT DIAGNOSTICS
OPERATIONAL	<ul style="list-style-type: none"> <li>• Live data streaming</li> <li>• Cloud &amp; on-premise options</li> <li>• Deployment services &amp; training</li> </ul>	<ul style="list-style-type: none"> <li>• Advanced event detection</li> <li>• Management of false positives</li> <li>• Explainable AI</li> </ul>	<ul style="list-style-type: none"> <li>• Advanced alarming</li> <li>• User interface &amp; visualization</li> <li>• Advanced sensor analysis</li> </ul>
TECHNICAL	<ul style="list-style-type: none"> <li>• OSI PI &amp; historian interoperability</li> <li>• ML model hosting</li> </ul>	<ul style="list-style-type: none"> <li>• Automated unsupervised learning</li> <li>• Cluster labeling</li> <li>• UI-Based model retraining</li> </ul>	<ul style="list-style-type: none"> <li>• Prioritized contributing features</li> <li>• Feature filtering</li> <li>• UI-Based cluster comparison</li> </ul>

**FIGURE 3**  
Typical Deployment Model



## The SparkPredict® Advantage

### Enhance Productivity and Reduce Time to Insight

- **Enterprise Software Application:** Targeted at SME users, SparkPredict requires no prior knowledge of data science.
- **Accelerated Deployment:** Machine learning models are built through a proven process repeatable for multiple asset classes to create a total plant solution.
- **Incorporated Domain Expertise:** Process and solution designed by in-house domain experts who understand the data and key challenges with existing predictive maintenance.

## About SparkCognition™

SparkCognition™ builds leading artificial intelligence systems to advance the most important interests of society. We help customers analyze complex data, empower decision making, and transform human and industrial productivity with award-winning machine learning technology and expert teams focused on defense, IIoT, and finance.