

# IMPACT TECHNOLOGIES

## Company Overview

*IMPACT*

# Leadership Statement

Impact Technologies, LLC ([impact-tek.com](http://impact-tek.com)) is a world class engineering firm that provides a wide range of products and services for analyzing, predicting, and managing the health of critical assets. Impact is recognized as one of the world's leading innovators in the field of complex asset Condition Based Maintenance (CBM) and Prognostics & Health Management (PHM). Our team of application engineers, technicians, program managers, and software developers provide equipment health management hardware solutions for a wide range of military and commercial applications encompassing the full spectrum of land, air, space and sea mobility platforms, power generation and industrial process equipment. Specific areas of expertise include automated prognostic and health management solutions for propulsion systems, engine and drive train components, electronics, actuators, pumps, compressors, and control systems.



## Company Overview

Impact Technologies LLC is a small business formed in 1999. Impact is headquartered in Rochester NY, with offices located in State College, PA and Atlanta, GA. 2009 revenue was \$20M with more than 85% of revenue being DoD related. Of the DoD revenue, 50% is attributed to Small Business Innovative Research (SBIR) programs with 30% in direct support contracts to DoD Original Equipment Manufacturers (OEMs) such as Northrop Grumman, General Dynamics, General Electric, Sikorsky, etc. and the remainder are direct government contracts. Impact Technologies has 140+ employees with 60% of engineers and program managers with MS or Ph.D. degrees. Other noteworthy items include:



THE ROCHESTER  
TOP 100

- Software accreditation to DO178B Level D standards and CMM Level 3 equivalency
- Personnel with active Secret Clearance
- Recipient of the Tibbet's award for SBIR success
- Recognized in the Inc. 5000 list of fastest growing firms (including being ranked 41st in the category of defense contractor)
- Over 15,000 square feet of Laboratory space for PHM Validation and Verification Testing
- Two active IDIQ contracts with the US Army and ONR (>\$25M)
- Congressional Plus-Up programs in excess of \$5M active through 2010

## Core Competencies

The company has built a solid reputation as “The PHM Company” to go to for innovative software and hardware products and solutions to help various branches of the military and commercial sectors monitor complex assets and inform operators and maintainers when critical components are starting to degrade, and estimate the remaining useful life of these high value systems. By understanding the current health of assets such as propulsion systems, power supplies, generators, and transmission components, and then being able to predict – with a high degree of accuracy – how much time remains until component functional failure, operators have the ability to schedule maintenance on a condition-based set of rules rather than a periodic, time-based schedule. To the owners of the asset, PHM/CBM technology means improved sustainability and operational availability, a valuable link in a reliability growth process and maintenance support costs that approach optimal levels.

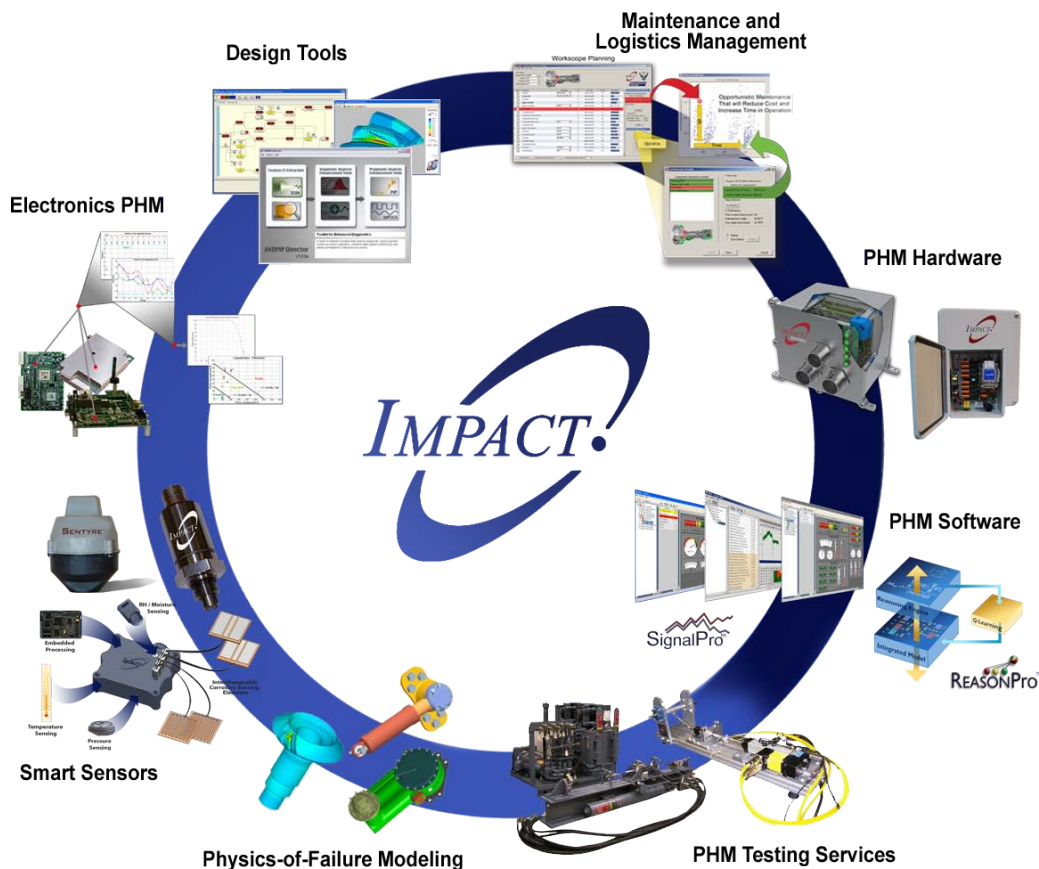
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# Impact's Innovative Products:

Serving customers globally, Impact Technologies is leading product development with cutting edge applications with the technical and creative ability to add value, reduce operating costs, and increase profitability across a wide range of industries and applications.

- Condition Based Maintenance and Monitoring Systems (CBMi™)
- Prognostic & Health Management Design Software (PHM Design™)
- Customized Signal Monitoring and Fault Detection Software (SignalPro™)
- Model-based Reasoning Engine (ReasonPro™)
- Logistics and Enterprise Asset Management System Optimization (Workscope Optimization™)
- Turbomachinery Engineering, Design, Testing & Analysis (BladePro™)
- Specialized Vibration Monitoring and Failure Prediction Software (ImpactEnergy™)
- Smart Wireless Sensing System (Sentyre®)
- Remote Data Acquisition & Processing Module (S<sup>2</sup>NAP®)
- Advanced Sensors for Condition Monitoring and Process Control (SmartMon™)
- Embeddable Data Acquisition and Processing (HealthMax™)
- Remote Wireless Real-time Location Tracking & Condition Monitoring of Assets (DuraTrack®)

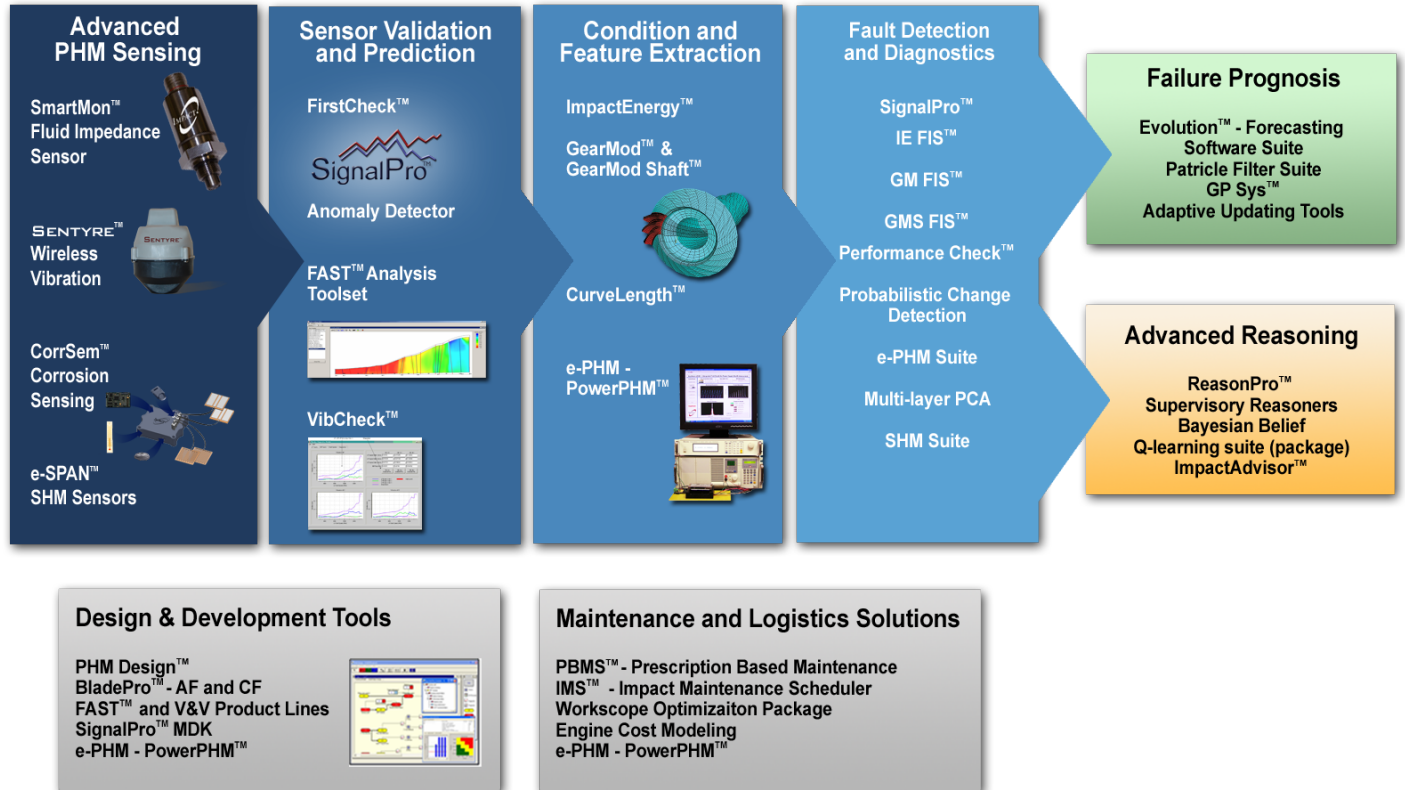


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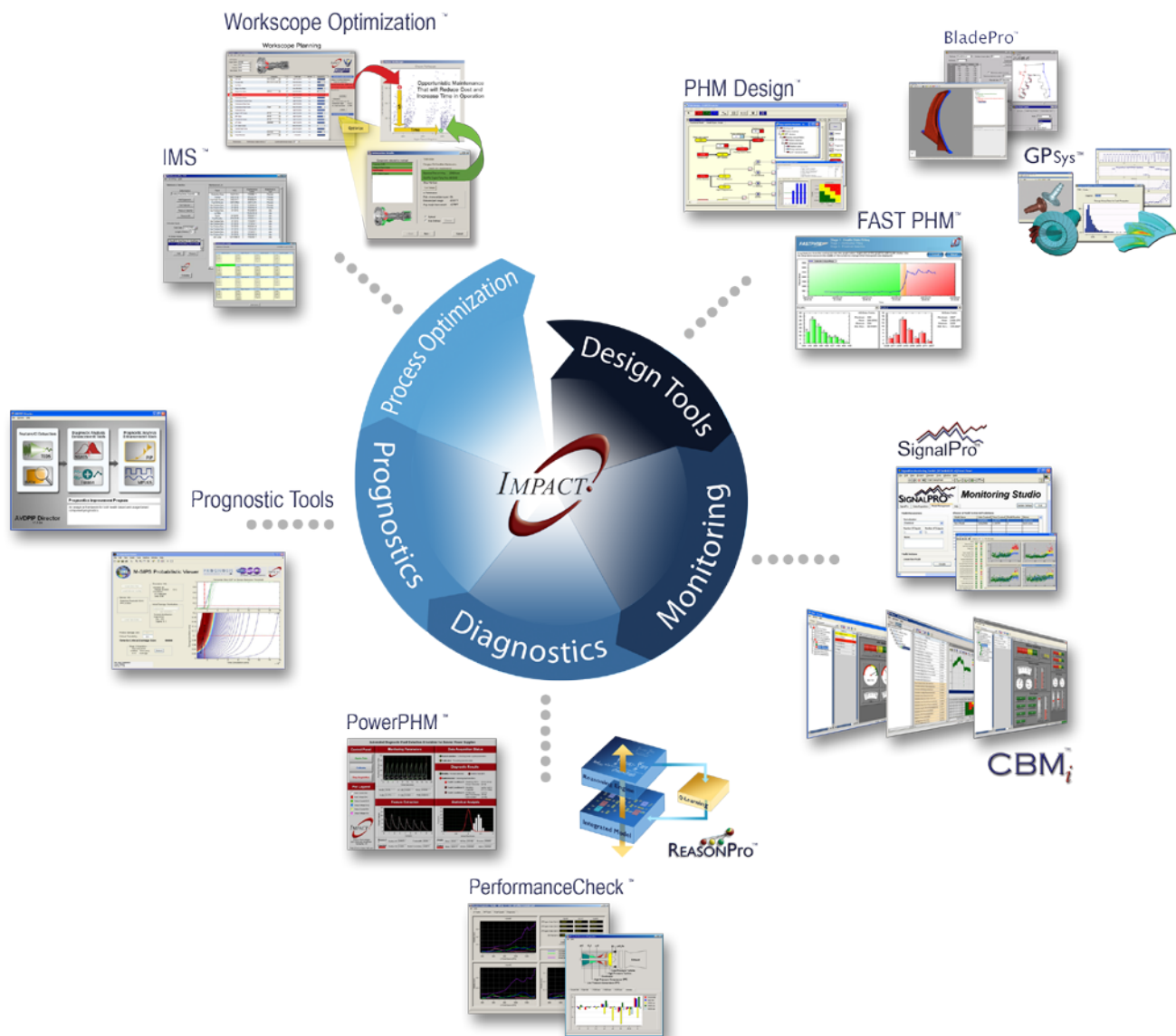
# Intellectual Property:

## Sensing Through Logistics



# Software:

Impact offers a wide range of software products to address all aspects of Prognostics and Health Management and Condition-Based Maintenance from the early design stages, all the way through to the maintenance and logistics software. We can deliver both off the shelf products that are tried and tested as well as customizable software solutions or a combination of both. Impact's unique software applications address common PHM/CBM issues such as sensor selection, optimized monitoring strategies, diagnostic and prognostics coverage and maintenance optimization.



## Hardware:

Impact provides its customers with unique blend of PHM sensors and hardware platforms that have the required built in intelligence for processing and analyzing the raw data at the source and outputting only the information necessary for making critical decisions about a system's health. From our in-line oil quality and wireless vibration sensors to our HealthMax™ integrated health management hardware platform, we are capable of detecting critical faults in the incipient stages and reporting the information for maintainers to take action.



## Impact Technologies Competitive Advantage:

What makes Impact Technologies stand apart from its competition is its breadth of products and associated IP in the field of Prognostics and Health Management that can be quickly applied to platforms or systems for enabling Condition-Based Maintenance. This includes the necessary PHM Design tools, smart sensors, embedded PHM software modules, hardware platforms and back end maintenance and logistics tools to help our customers obtain the maximum return on investment in the shortest period of time. Our PHM products provide a unique blend of “physics-of-failure” and “feature-based” diagnostics and prognostics that are implemented through a generic prognostic software architecture to predict future behavior with more certainty than our competitors. In addition, our specialized health tracking features can be trended over a system's life and compared with model-based remaining useful life estimates to provide collaborative evidence of a degrading or failing condition.

The table below provides an overview of Impact's core competencies and experience.

	Application Domain Experience							
	Aerospace (Military)	Aerospace (Commercial)	Military Ground Vehicles	Automotive	Naval Ship Systems	Medical	Manufacturing / Process Plants	Power Generation
<b>Consulting Services</b>								
* Health Management System Requirements Development	●	●	●		●			
Database Design	●		●		●			
* Prognostics and Health Management (PHM) / Condition Based Maintenance (CBM) Engineering Consulting Support	●	●	●		●	●	●	●
Systems Engineering (DODAF)	●		●					
* Prognostic and Health Management Training	●	●	●	●	●		●	●
* Vehicle Health Management System Design	●	●	●		●			●
* Wireless Network Architecture Design					●	●	●	●
<b>Engineering Design / Analysis / Modeling</b>								
Data Analysis and Signal Processing	●	●	●	●	●	●	●	●
* Physics-of-failure modeling (mechanical)	●	●	●		●		●	●
* Physics-of-failure modeling (electrical)	●	●	●		●		●	●
Turbomachinery component design / analysis	●		●	●	●		●	●
Reliability Analysis	●		●					●
Intelligent Control System Design and Development	●		●		●			
* Structural (FEA) Modeling	●		●	●			●	●
ThermoFluid Systems Modeling	●	●	●		●		●	●
<b>Algorithm Development and Integration</b>								
Diagnostic Module Development and Integration	●	●	●		●	●	●	●
* Prognostic Module Development and Integration	●	●	●		●	●	●	●
* Data Mining and Knowledge Discovery	●		●					
* Model-based Reasoning	●		●		●		●	
Optimization Algorithm Development and Integration	●				●			●
<b>Software System Development</b>								
* Win OS/Linux-based standalone software application development	●		●		●		●	●
Embedded Software development	●		●		●			
* Ground Support Equipment Software Development	●		●					
* Enterprise Health Management Software (Web Services)	●		●					
* Standalone Maintenance Management Software	●				●			
<b>Sensors</b>								
MEMS multi-sensors	●							
* Oil Quality Sensing	●		●	●			●	
<b>Lab Testing Services</b>								
* Prognostics Validation Lab Testing Services	●	●						
<b>In-situ Testing Services</b>								
On-site vibration testing							●	●

\* = Core Competency      ● = Programmatic Experience

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