



# Impact Technologies

Impact Technologies, LLC is an award winning 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 and Health Management (PHM) technologies. Impact develops equipment health management hardware and software solutions for a wide range of military and commercial applications encompassing 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.

## Working With Impact

The company has built a solid reputation as the go to "PHM Company" for innovative software and hardware products and solutions. We support all branches of the military and various commercial sectors by monitoring their complex assets and informing operators and maintainers when critical components are starting to degrade, while estimating 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 being able to predict – with a high degree of accuracy – how much time remains until a components 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 to a reliability growth process and maintenance support costs.



# Applications

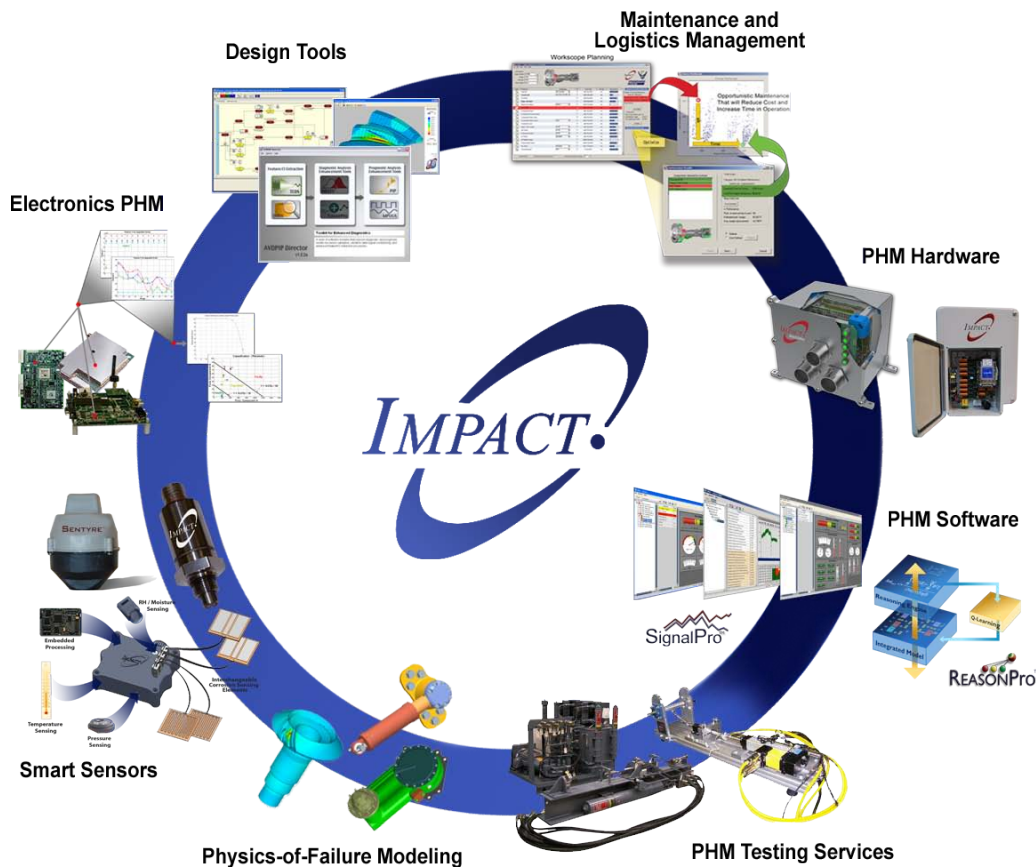
Aerospace  
Ground Vehicles  
Marine Systems  
Power and Industrial  
Electronic Systems  
Maintenance Management  
Design and Systems Engineering  
Commercial Systems Integration

# Innovation

Impact Technologies' technical and creative ability has led to the development of many cutting-edge applications that add value, reduce operating costs, and increase profitability across a wide range of industries and applications.

- Smart Wireless Sensing System (Sentyre™)
- 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™)
- Advanced Sensors for Fluid Condition Monitoring and Process Control (SmartMon™)
- Specialized Vibration Monitoring and Failure Prediction Software (ImpactEnergy™)
- Remote Wireless Real-time Location Tracking & Condition Monitoring of Assets (DuraTrack®)

$$\exp \left[ -\frac{(X - X_i)^T (X - X_i)}{2\sigma^2} \right]$$



# Core Competency

	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	●	●						
In-situ Testing Services								
On-site vibration testing							●	●

\* = Core Competency    ● = Programmatic Experience

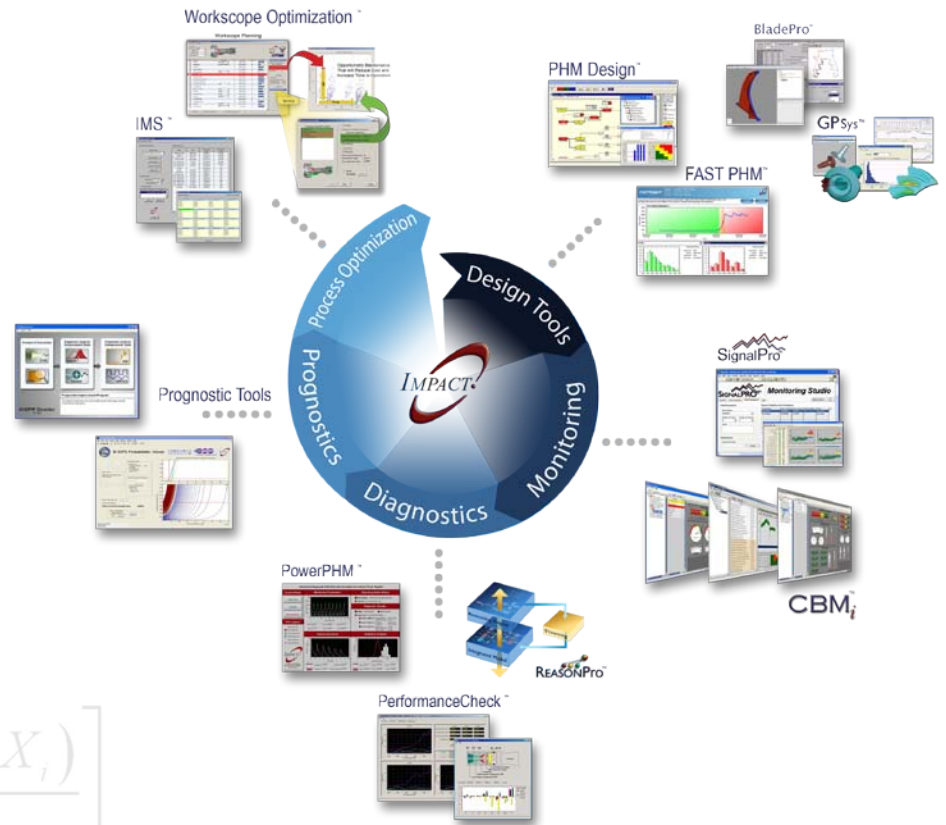
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$$X = [x(t - 9), x(t - 8), \dots, x(t)]$$



# 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.



$$\exp \left[ -\frac{(X - X_i)^T (X - X_i)}{2\sigma^2} \right]$$



# Hardware

Impact provides its customers with a unique blend of PHM sensors and hardware platforms that have the required built in intelligence for processing and analyzing 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.

