

PHM Testing & Analysis Capabilities



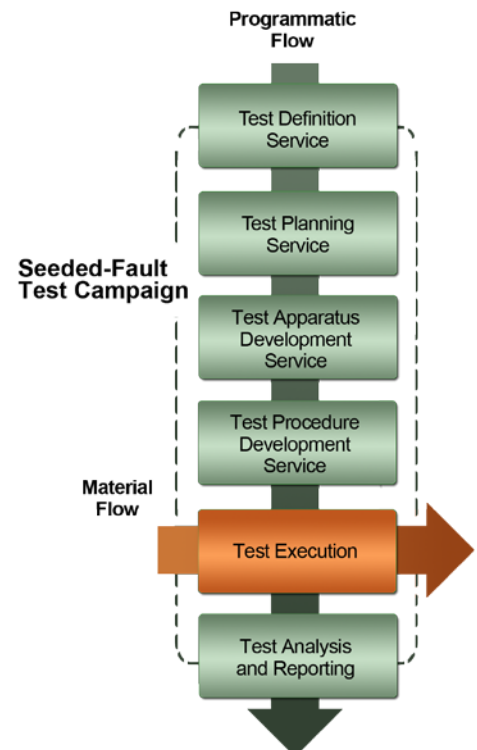
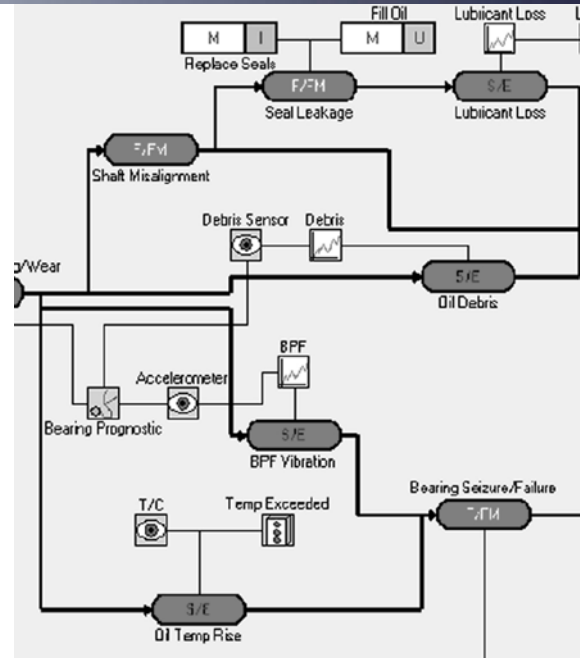
Campaign Integration

The potential operational and cost advantages of Prognostics and Health Management (PHM) are well established. The key to realizing this potential is the sensitivity, accuracy, and precision of the PHM system's anomaly detection, diagnostic features, and prognostic elements. Although there may be many reasons that drive the implementation of a PHM system, one common reason for implementing a PHM system is to guard against known failure modes whose root causes cannot be fully addressed by design, process, or operational procedures. In these cases the seeded-fault test methodology provides one of the most effective mechanisms for ensuring the potency of the PHM design.

The Seeded-Fault Test Campaign

1. Interfacing with known information sources regarding a targeted class of faults to capture test objectives, rules, priorities, and constraints.
2. Synthesis of the seeded-fault test campaign plan to address test objectives within identified constraints.
3. Design, development, fabrication, and operational support of specialized test apparatus required by the campaign for test execution.
4. Development of test procedures for individual test threads as well as device acquisition, device handling, incident reporting and resolution, and equipment setup and teardown.
5. Execution of the seeded-fault test threads.
6. Analysis and reporting of individual test-thread results and campaign summary to interface back to programmatic technical management elements.

Impact Technologies' consulting and technical support can range from supporting individual campaign elements to ownership of the end-to-end seeded-fault test campaign. The degree and type of service provided may be tailored to direct the appropriate expertise on areas of greatest value within the constraints of a given project.



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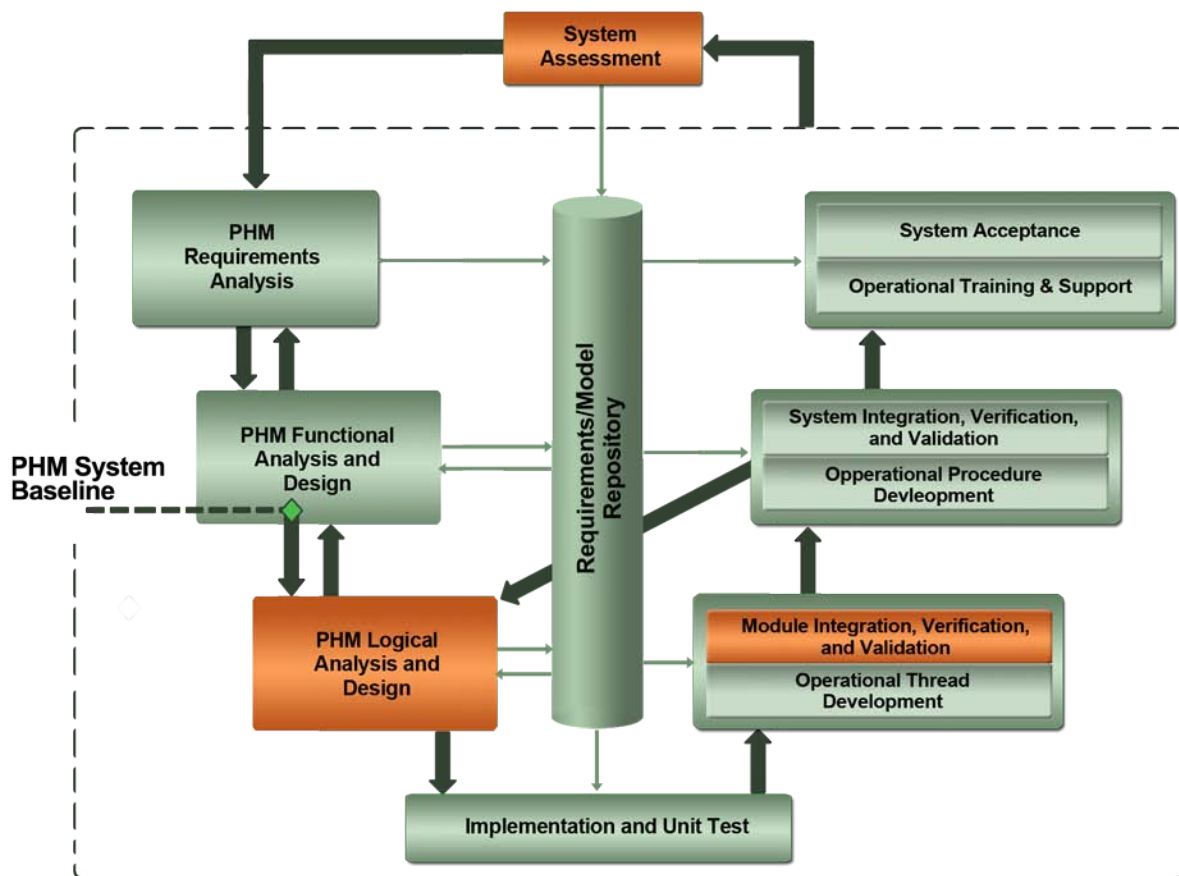
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Integration into Existing Test Programs

Among the features of Impact Technologies' Seeded-Fault Test methodology is the capability to leverage and complement the activities of other test programs. Engineering development, brassboard, and proof test campaigns may be augmented with seeded-fault testing to provide PHM concept validation and design feedback during the synthesis of PHM elements. Qualification, verification, and validation tests might also be augmented with seeded-fault elements to verify the PHM design and characterize PHM operational parameters and models. Finally, life-testing, stress-screening, HALT/HASS/HASA, and ORT testing can be supplemented, and sometimes improved, by the addition of seeded-fault elements. The original screening and monitoring objectives of these tests are retained while the seeded-fault element provides feedback that allows for the maintenance and continuous improvement of the PHM system operational characterization.



A Seeded-Fault Test Campaign may be integrated with **PHM Logical Analysis and Design**, **Module Integration, Verification and Validation**, and **System Assessment** within the PHM system's development and Support Cycle.