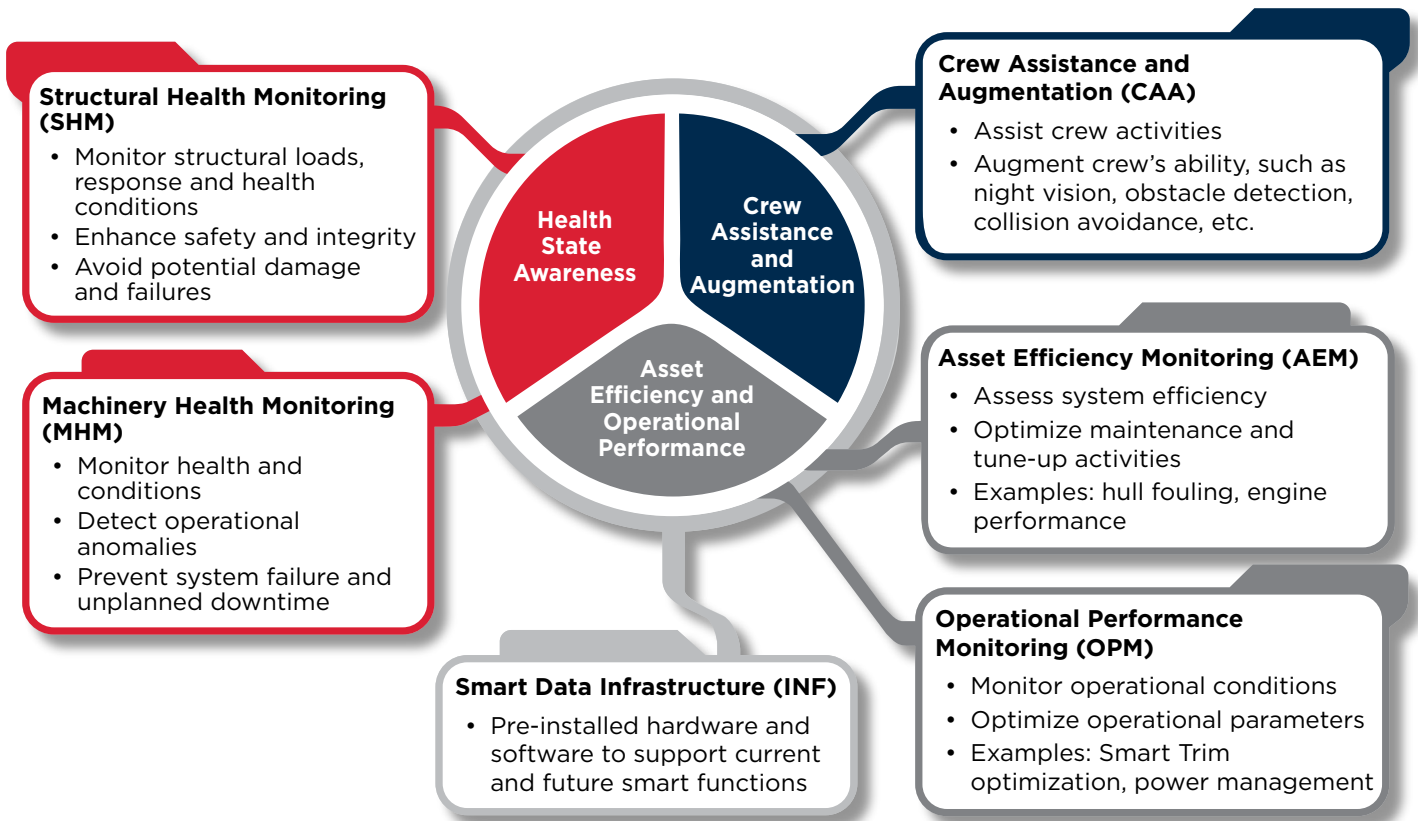


ABS SMART FUNCTIONS PDA FOR EQUIPMENT

Smart Functions (SF) are systems and services installed and deployed to collect, transmit, manage and analyze report data. These systems are designed to enhance health and condition awareness, operational optimization and decision-making support.



PRODUCT DESIGN ASSESSMENT (PDA) AND SERVICE SUPPLIER (SS) RECOGNITION

ABS issues a PDA to the smart function provider upon completion of an engineering evaluation and an on-site survey under the ABS Type Approval program:

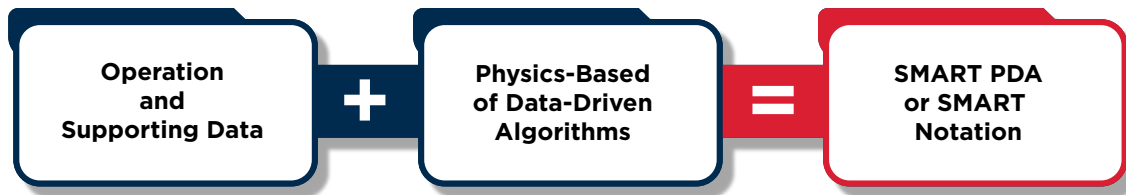
- Smart function categories eligible for the PDA are: SHM, MHM, INF, CAA, AEM, OPM (See figure above.)
- The machinery system(s) to which the smart function applies and the capability of the smart function indicating anomaly detection (Tier 1), diagnostics (Tier 2) and prognostics (Tier 3) are annotated in the PDA.
- Engineering evaluation includes the assessment of the hardware and software the smart function vendor uses

for implementing the smart function, data handling and data analytics.

- Once a smart PDA product is installed on board a vessel, the vessel will be eligible to receive the corresponding SMART notation after the installation and commissioning survey, without requiring the full engineering review.

If the smart function implementation includes onshore back office support (ex., datacenter, SME support) for providing data analytics and/or periodic health reporting, ABS can provide Service Supplier recognition for the service. The service supplier may be the primary vendor of the smart function or it could be a third-party provider.

SMART FUNCTIONS COMPARED TO TRADITIONAL CONDITION MONITORING (CM)



The difference between MHM/SHM, as a smart function and traditional CM lies mainly in SHM/MHM's use of operational data trending and the application of one or both of the following model-based analytical methods:

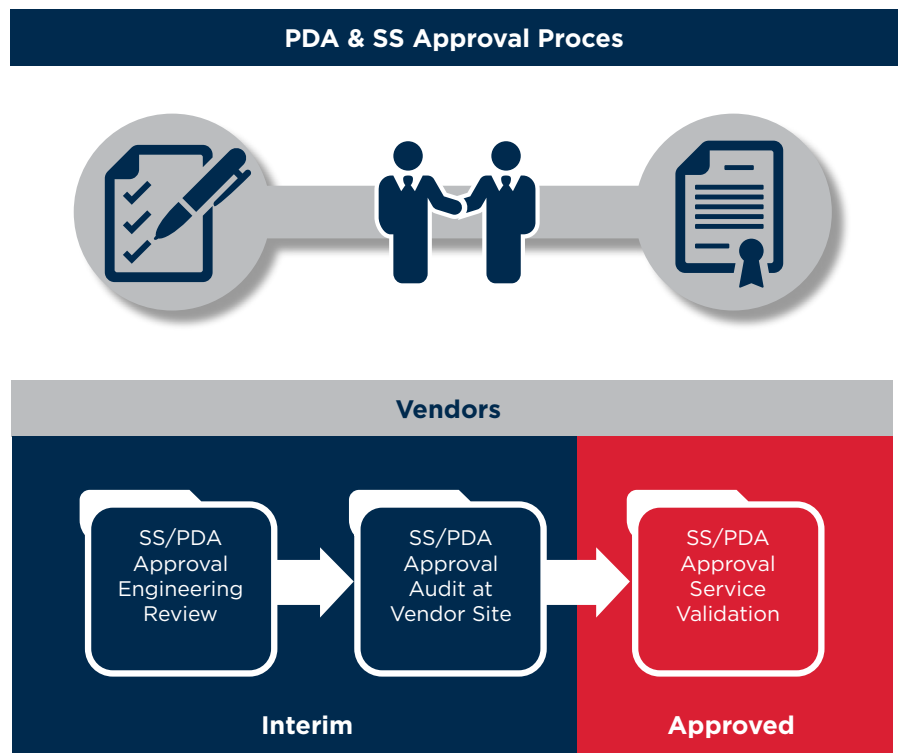
1. Machine/system diagnostics/prognostics using physics-based models and techniques.
2. Machine/system diagnostics/prognostics using historical data-driven models and data analytics such as machine learning algorithms and similar techniques.

BENEFITS OF SMART FUNCTIONALITY

- A smart function with an ABS PDA enables the vendor to provide services that increase health state awareness to enhance safety and asset integrity and minimize downtime associated with failures and maintenance.
- Smart PDAs help the vendor install ABS recognized products and services that improve asset efficiency and operational performance in order to reduce fuel consumption, emissions and operational expenses (OPEX).
- The vendor can use the ABS PDA to demonstrate their services can assist and augment crew with vessel operations related to navigation bridge management and compliance reporting to enhance vessel situational awareness and navigation safety, reduce crew workload and minimize potential human error.

APPROVAL PROCESS

1. Complete the online request form found at www.eagle.org/typeapproval.
2. ABS will initiate an engineering review which includes functional and system requirements as well as the relevant quality documents.
3. Upon the completion of a satisfactory engineering review, an onsite audit will be conducted. The onsite audit will be performed from the quality assurance/quality control (QA/QC) perspective and covers operational capability, tool development and deployment process and data center support.



Interested in learning more about this type approval endorsement? Visit www.eagle.org/typeapproval.

WORLD HEADQUARTERS

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