

IConIC : Developing the world's first non-invasive marine vessel monitoring system

The performance of marine engines used for propulsion and power generation has a significant impact on efficient vessel operation. Inefficient/failed engines on large vessels can cost their owners £millions.

The Intelligent Condition Monitoring with Integrated Communications (IConIC) project has developed a method for saving fuel consumption on marine vessels by detecting anomalies within marine engines that can impair performance. It represents a step-change in the marine industry, through linking autonomous measurement systems to existing maritime satellite communications in order to develop an automated 'machine to machine' and ship-to-shore data exchange capability, increasingly described as the 'internet of things'.

STS Defence, a Gosport based SME led on this project with the Satellite Applications Catapult providing the support for the satellite technology and the integration of satellite services including communications.



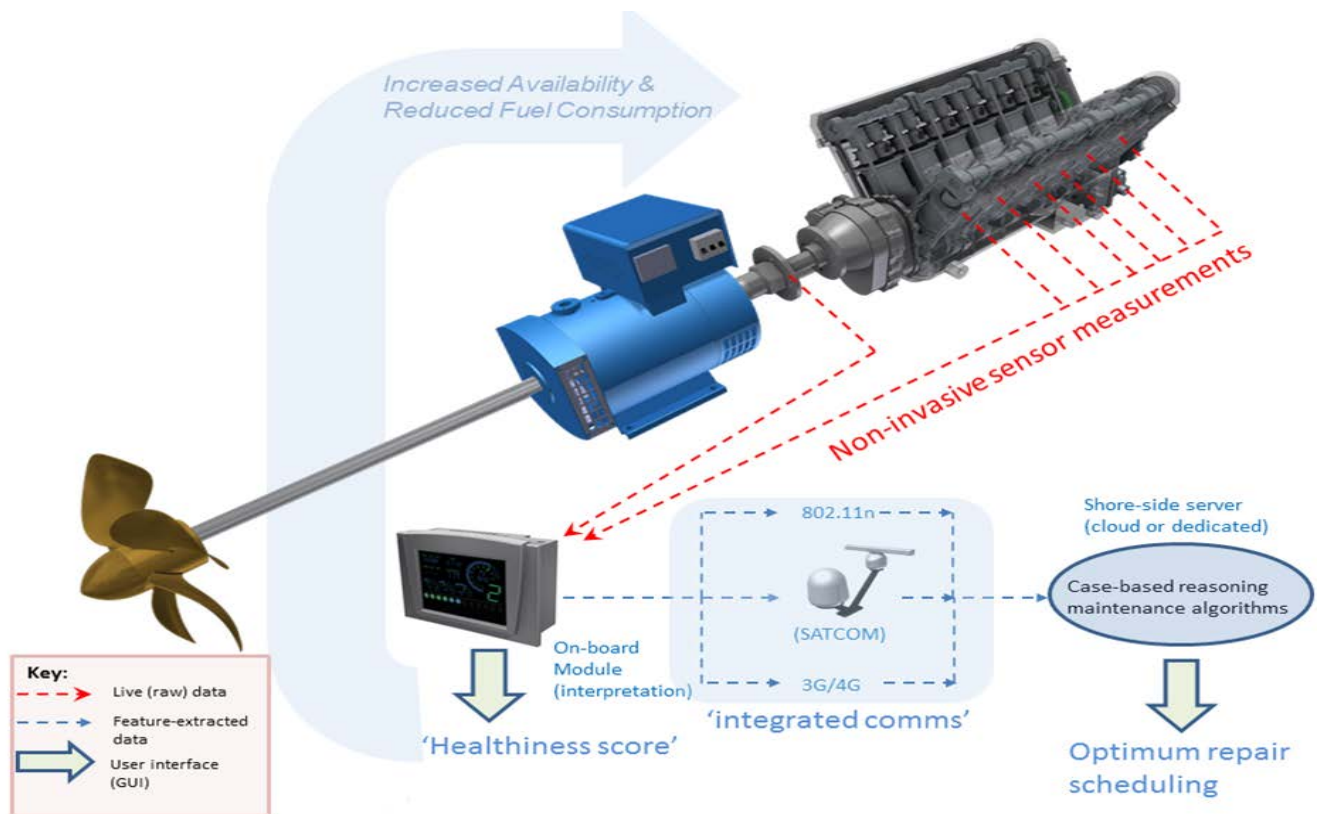
Challenges

The solution needed to be non-invasive & capable of automatically providing as much information to the end-user, with very limited engineer involvement. In addition, a cost effective, user friendly fully integral service was the end product that would be applicable to a wide range of vessels.

A sophisticated intelligent and automated communication system also needed to be developed in order to allow transfer of the data to support decision-making not just on the vessel but shore side too.

“The consortium’s experience in satellite communications and electronics have led to the first ever non-invasive condition monitoring system that principally detects ship propulsion faults, resulting in reduced maintenance costs and lost downtime while docking. This is a fantastic project to be involved in and further evidence of the Catapult’s unique capability and reach, as well as an example of how satellite applications are playing an intrinsic role to help maintain the eco balance of our oceans.”

Stuart Martin, CEO of the Satellite Applications Catapult



Outcomes

It is possible to perform non-invasive condition monitoring on marine diesel engines.

Using an intelligent algorithm the amount of data to be transferred ship to shore is significantly reduced which reduces costs but also overcomes the challenges with usual communication systems which requires the sharing of channels and are therefore highly inefficient when dealing with the large quantities of data.

Applicable to engines of all sizes and on 2/4 stroke firing cycles the method can perform fault detection for different land and vessel operating profiles, from well/poorly maintained land engines, to coastal tubs, ferries and oil tankers.

“Ex-Royal Navy master mariners among our partners are really excited about what we are doing in helping operators to avoid costly breakdowns and unscheduled diversions, also in simply getting live engine data ship-to-shore. We now have 11 people [in Intellimon] and growing, with a target to begin generating revenue this year. IConiC is by far and away our biggest project”

Dr David Garrity, Chief Scientist at STS Defence

Outputs

- 2 patents to protect the core algorithm and its implementation on a silicon board
- Growth of R&D team at STS Defence and the creation of separate business division within the company , ‘IntelliMon’ with 11 full time posts secured
- Additional trials scheduled post project period.