

Government Funded Airfighter Platform Initiatives

ICHM® DUAP

Sponsors: JSF, DARPA, OSD Dual Use Program Office and OST CO-funding

Start: November 1998 **Complete:** June 2003

Develop a fully functional, wireless, machine prognostics and health management (PHM) sensor array for military aircraft engine monitoring. Effort requires development of signal acquisition, processing, wireless communications, and fault modeling technology to provide unattended diagnostic and prognostic capability. OST is also developing proprietary circuits to meet fidelity, bandwidth, cost, and power requirements. All of this capability will be developed into an ICHM® designed to be installed in a JSF application with significant environmental demands.

OST received the first runner up (to Raytheon) 2001 DARPA Sustained Excellence by a Performer Award for their performance in the ICHM® DUAP.

ICHM® DUAP (Dual Application) Program for Joint Strike Fighter (JSF) Wireless Sensing Technology Application

DARPA recognized the need to have affordable technology for the prognosis objectives of the Joint Strike Fighter program. Late in 1998, they contracted with Oceana Sensor to provide development of wireless, smart, sensing technology for this application. The reviews of the technology development were opened to substantial potential customers in both the military and commercial markets.

- Nov. '98- DARPA Tactical Technology Office Contracted with Oceana Sensor to Develop Wireless Sensing Technology Critical to Viability of JSF Prognosis Program
- 50/50 Cost Share Dual Use Application Program Focused on Serving both Military and Commercial Applications.
- Oceana Sensor Technologies nominated among only six companies for prestigious award at DARPA Tech 2000
- Reviews Attended by Prime Contractors (Lockheed Martin, Boeing, Pratt & Whitney, etc.) and Commercial Industry (Caterpillar, Flowserve, Timken, etc.)

Accomplishments

- Pushed the Limits of Commercial “System on a Chip” Capability
- Created Wireless Smart Sensor Technology Platform
- Proved 2.4GHz RF Communication Viability on Military Platforms
- Demonstrated Viable Sensor System Self-test Technology
- Technology Basis for
 - R&D Application Development Programs
 - Commercial Product Development

Benefits to Flight Applications

- Weight
- Cost
- Reliability
- Performance
- Sustainability
- Flexibility for future expansion



Intelligent Maintenance Advisor for Turbine Engines (IMATE)

Sponsor: JSF, DARPA, OSD Dual Use Program Office and OST Co-funding

Start: November 1998 Complete: November 2000

Consortium partner with General Electric Aircraft Engine, BAE (previously Lockheed Martin Controls Johnson City). Developed and demonstrated high temperature sensing capability and wireless data acquisition on propulsion gas turbine engines in GE test cell. Measured vibration, temperature, and blade pass acoustic impulse with wireless data acquisition system on P&W F110 engine seeded fault test.

Joint, Advanced, Health, Usage, Maintenance Monitoring System (JAHUMS)

Sponsor: US Navy ACTD

Start: May 1998 Complete: Oct 1998

Demonstrated the capability and ROI for utilizing wireless sensing for rotorcraft HUMS applications. Cost and weight savings estimates over existing wired systems were approximately \$50,000 and 20 lbs respectively. RF system demonstrated on a rotorcraft ground static test.

Structural Integrity Prognosis System

Sponsor: DARPA

Start : Oct 2004 Estimated Completion: Oct 2009

Developing a flight qualified wireless sensing system that will detect and monitor structural integrity of fixed wing aircraft.