Challenges

Typical challenges related to the investment in reliability and the lifecycle of a part include:

Assurance of part reliability: the costs associated with reliability investments are often unknown as it relates to the lifecycle of a product. Where should the investments be made? What is the return on those investments? This information is critical to any program or weapons platform.

Every increasing lifecycle of weapons platforms: as weapons platforms are reset to modern standards, and the length of time in service is extended, what investments should be made to extend the life of the equipment?

The Solution

The goal of this solution is to perform an analysis of reliability options to determine costs and benefits. This solution begins with a comprehensive review of the weapons platform or part under consideration, with an emphasis on historical maintenance records. The key is to identify those areas that lack reliability based on repair actions in the field. Once the current “as-is” state is defined, an analysis is performed, employing proven reliability and lifecycle techniques, to evaluate and support the investment for reliability.

Solution Benefits

The dynamic modeling of supply chain lifecycle costs provides the following benefits:

• Demonstrates the affect of reliability investments and improvements on lifecycle costs.

• Demonstrates the additional impact of demand and unit cost on payback periods of reliability investments.

• Provides guidance for analysis of investment strategies with regards to reducing overall lifecycle costs.
Implementation

The professional services required to implement this solution are as follows:

- **Phase 1 – Assessment**
  
  Determine the “as-is” reliability state for the weapons platform, to identify key areas of focus and the investment needed to extend the lifecycle of the platform or part to establish the scope of the effort.

- **Phase 2 – Discovery**
  
  Based on the assessment, perform the needed discovery to gather the information for the models including meetings with maintenance personnel to gather metrics needed for the analysis.

- **Phase 3 – Design**
  
  Based on the data gathered and the complexity of the scope, a variety of modeling tools will be deployed to perform the analysis. The output of the analysis is typically a graphic showing a range of possible investment options and improvement scenarios over time (see Figures 1 and 2).

- **Phase 4 – Recommendations**
  
  The output from the analysis is documented and presented to the client for action.

**About the Electro-Optics Center**

The Electro-Optics Center (EOC), a proud part of The Pennsylvania State University, is a hybrid between the best components of a university and those of private industry. This relationship allows us access to the university’s researchers and scientists, its state-of-the-art facilities and leading edge research.

Our staff, comprised primarily of former industry and DoD personnel, brings experience in exceeding sponsor and corporate expectations. Through the application of this hybrid model, the EOC is able to provide its sponsors with solutions that combine leading edge research with on-time and on-budget deliveries. Learn more at www.eoc.psu.edu.