Abstract ID: 5858

Title: A Quantitative Model for Predicting Project Success

Abstract Text: This presentation focuses on the use of predictive modeling to predict the likelihood of success for aerospace and defense programs. Predictive modeling relies on historical program performance data (predictive analytics) in conjunction with a forecasting algorithm model to forecast future outcomes. These models can range from simple extrapolation techniques to sophisticated Neural Network based models. The advantage of these models is that it allows practitioners to test their instincts before making strategic or operational decisions, and to greatly extend the use of historical data. The presentation will discuss the principles of predictive modeling, outline the fundamental methods and tools, and present typical results from an aerospace application of the techniques.

DISCUSSION

Predictive modeling has been successfully used in other industries: • Financial. Predictive modeling is used to reduce the cost associated with Credit Card fraud, and to improve the ROI on targeted marketing consumer campaigns. • Healthcare. Predictive Modeling is used to reduce the cost of Disease Management, improve quality of care, and reduce operation cost. • Retail. Predictive modeling is used to increase revenue/customer by determining what other products or services a consumer will buy based on prior purchase. • Government. The Federal Aviation Administration is identifying links between pilot health conditions and aviation accidents with an eye toward avoiding them.

This presentation examines applications such as: • Schedule Risk at WBS level based on past performance; • Cost Risk at WBS level based on past performance; • Technical Risk at WBS level based on past performance; • Spending and staffing profile for the program life cycle; • Subcontractor risk profile based on past performance; • Sub-tier quality at subcontract and WBS.

While the underlying predictive models can be complex, the presentation of the results to business users must be intuitive. Business users need the ability to easily run the models and present the results to their constituents. This requires statisticians and analysts to create and deploy the models and reporting formats without requiring a systems or information technology understanding. Business users should then have the ability to use the enterprise models that have been defined and then run "what-if" scenarios to predict and test outcomes. In addition, historical data must be used to calibrate and refine the model.

Primary Author: Rick Hefner
Northrop Grumman Corporation

Additional Author(s): Philip Paul