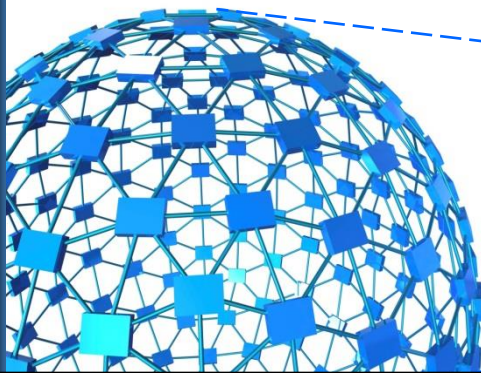


7th Annual INCOSE Great Lakes Regional Conference***Leadership Through Systems Engineering******Aerospace | Commercial | Defense | Health Care | Manufacturing | Academia*****Brian Ouellette, *Identification of System Level Issues through Data Analysis***

Abstract: Data plays an important role within industry, from product validation to predicting future results to understand data trends within use cases. How data is used can aid in gaining further system level understanding. Data exploration and discovery can lead to identification of system problems. Are system level issues present on a new product that can be fixed prior to getting into the customer's hand? Does the data contain interactions or do the elements react independently? Does the system contain elements of variation within singular repeatable events? What are the system trends over the course of a year? Do seasonal effects impact the system performance? Are anomalies present within the data a result of data integrity, or is it a real system issue? Is a system anomaly the result of the individual operator or consistent among a large population? System elements have grown in both complexity and technical maturity to align with ever changing regulations and customer requirements. So too have the elements of their associated data. The challenge is how to utilize best practices in data analysis of complex systems to attain complete system level understand without adding undue complexity to the data itself.

This presentation will explore different methodologies of data analysis which can be applied to identifying and understanding system level issues. The concept of Systems Analysis will be introduced and how Cummins Inc. is using Systems Analysis as a way to learn about system performance behaviors from the perspective of engine, aftertreatment, vehicle, driver, and environment. Along with an overview of currently employed data analysis processes, "Big Data Analytics" and its potential impact to overall systems data analysis will be discussed. Today, most data is presented with an overall daily output in addition to a cumulative statistical output. In order to fully utilize the power of data, the vision of "Big Data Analytics" needs to be explored and applied in a ways to empower data to assist in problem resolution and drive necessary change.

Author:



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