$150,000 NAVY NAVAIR STTR Phase I Award (September 18 2017 – April 2018): Techniques to Adjust Computational Trends Involving Changing Data (TACTIC-D)

The integration of data from numerous, disparate sources makes the transformation of those data into actionable information extremely difficult. Applying analysis, synthesis, and predictive modeling techniques to this problem space using human interaction would be impractical. This is especially true of converting data to information in situations which are rapidly changing and in which human life might be at risk. A primary example of this type of situation is on the battlefield. Combining data which are sparse, varying in reliability, and with a time dependent factor to other data such as inventory, capability, and availability to make a decision falls into the category of complex decision support systems. Addressing this problem space will require using adaptive Big streaming data analytics that can:

a. *model cyber physical infrastructures that encompass realistically complex warfighter scenarios.*
b. *ingest the massive data sets needed to capture large-scale dynamic systems complexity.*
c. *process and update the analytics results in a timely manner in order to test contrasting mechanistic models and drive the next set of analyses.*

Currently, there is no adaptive big data analytics framework that process data streams in real-time and adapt to changes in cyber physical environments, as well as in the heterogeneous data being received. The goal of this project is to develop an Adaptive Big Data Analytics Environment (ABDAE) that can adjust computations to respond promptly to rapid changes in data and cyber physical environments