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Data Approaches to Improve Mission Effectiveness

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The quest for the perfect common operating picture (COP) is one many commanders long for only to be sorely disappointed. Much of this disappointment and falling short stems from disconnected systems and knowledge management issues which separate data sources and analysis workflows. Thus, and sadly until present, most deeper analyses required to properly gauge risk and opportunity to ongoing missions remains a laborious and manual one executed by a large set of analysts siloed by classification level.

Even with the introduction of AI and ML capability to automate data analysis processes and identify meaningful relationships, application of this capability remains rudimentary. Current paradigms favor additional tool adoption versus true capability integration, which only exacerbates the challenge by spending dollars but rarely moving the know-how needle. Specifically, more insights do not necessarily produce enhanced understanding of any mission risk or opportunity.

Moreover, data platforms are useful in accessing multiple tools and solutions across hybrid cloud environments, but these too feature isolated API or data feeds as part of any common operating picture creation. Once more, and in this stage, this picture requires heavy analyst effort to ascertain how the sum of the COP parts warrants additional looks plus – if available – more data feeds (often at higher classification levels) to create informed recommendations of value.

Recommending an alternative and one currently conducted by Peraton: commanders and their staff are missing a golden opportunity to pivot these platforms and centralized AI and ML models to identify purposeful data relationships (ie configuration, associations, time series, etc.) across various tools and streams. In tandem, to apply a series of even simplistic data structuring to allow co-mingled analyses and visualizations to occur. Also, and importantly, apply automation – assisted by human SMEs – to highlight normalized data presentations across a data lake and to auto-construct threat and opportunity scores which can account for normalized event data distribution and standardized deviations.

These steps also allow for ML predictive modeling to proactively identify risk and opportunities to mission informed by anomalies that occur...and with confidence. Inserting and semi-structuring supporting data feeds only enhances confidence in findings, while – once more – better pivoting human analysts toward directions of greatest need. It's about training the models and analysts, simultaneously, to work together.

Still, to get to the alternative would be a dramatic contrast that requires a re-think of technology adoption cycles and execution with a now greater premium on data integrators, risk/opportunity data model development and maintenance, also workflows and UI/UX to ensure rich data analyses are providing insights in a familiar and actionable fashion for end users. For example, the structure and process build of joint visualization is vital in storytelling, even with high confidence risk and opportunity information indicating a need for attention.

Also, all this counters an argument for more data sources and tools by default, rather to emphasize integration and re-purposing first and foremost. Historical data must be considered as part of risk or opportunity assessments to standardize data models, likewise, to create time series enactments of what future battlespace conditions may look like under adjusted parameters.