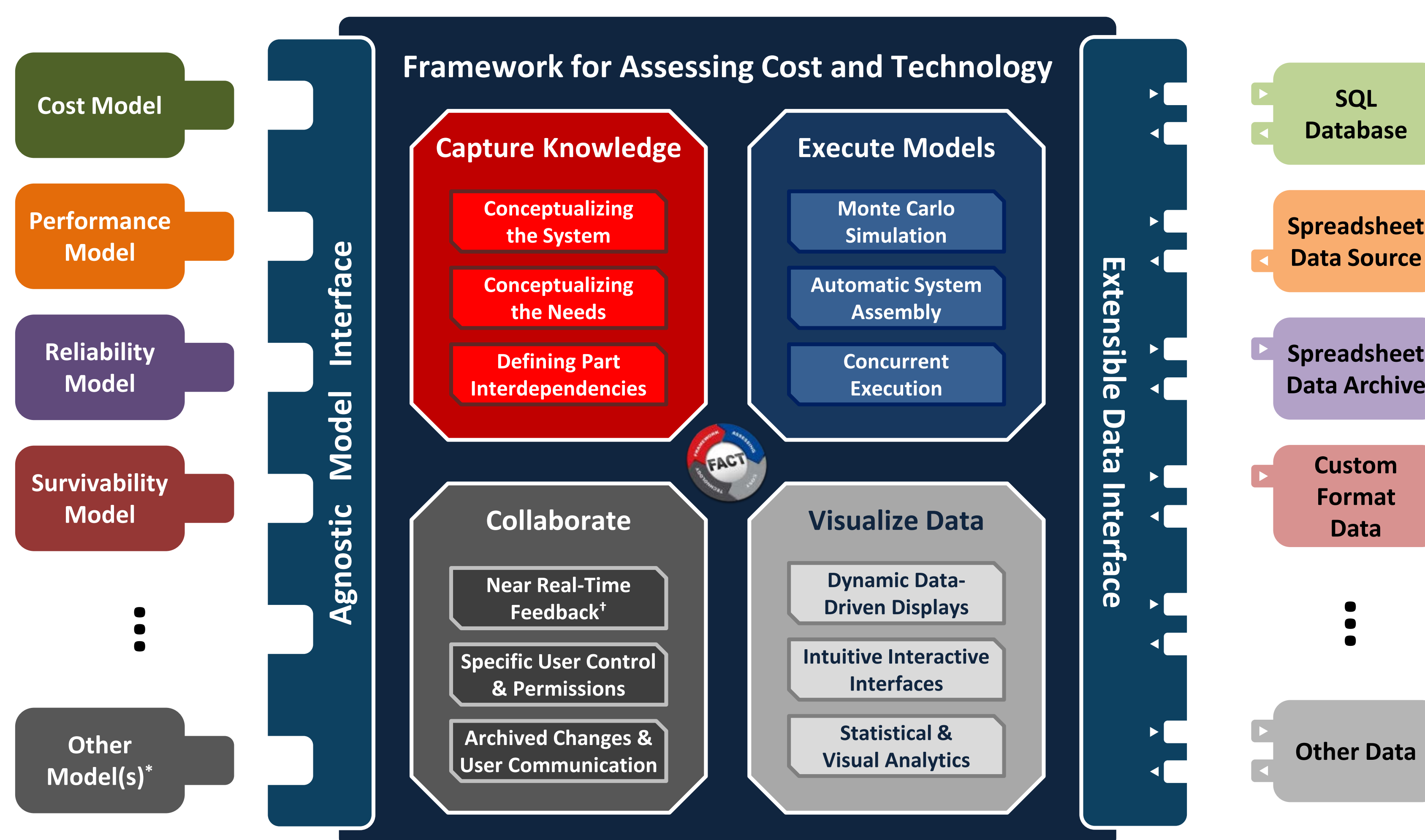


Research Task/Overview

Use and modify FACT to create a tradespace framework to support PEO-LS in ground vehicle acquisition. Define the necessary framework capabilities and models and determine their impact on the FACT workflow. Facilitate a series of technical exchange meetings (TEMs) to exchange data and provide support on the use of FACT. Support PEO-LS' use of FACT in the following areas:

- Incorporating new and existing models and data into FACT, such as Market Research Databases (MRDBs) and in-house MARCORSYSCOM/PEO-LS models.
- New visualizations for decision-maker insight
- Training documentation and tutorials
- Improved management capabilities such as batch running of analyses, saving Monte Carlo runs, capturing analysis notes, viewing history based on MRDB or user updates, and enhanced configuration management capabilities
- Hosting the FACT server
- High-fidelity modeling of water mobility performance, including analysis of models which provide insight into the transition from displacement to planing modes for high-speed vehicles.
- Reliability, maintainability, and availability (RMA) analysis using the Clockwork Solutions models, i.e. DemandPro and/or Insight LCM.
- Land performance modeling to explore the incorporation of higher-fidelity models into FACT, and the tradeoffs in using existing low-order physics-based relationships.
- Integration risk or system-level Technology Readiness Level (TRL), used in conjunction with the current Diversity Metric



* There can be multiple models within these generic categories, e.g., cost models for both the life cycle and acquisition, each being its own "peg"

† Requires integrated models to be executable in near real-time

Goals and Objectives

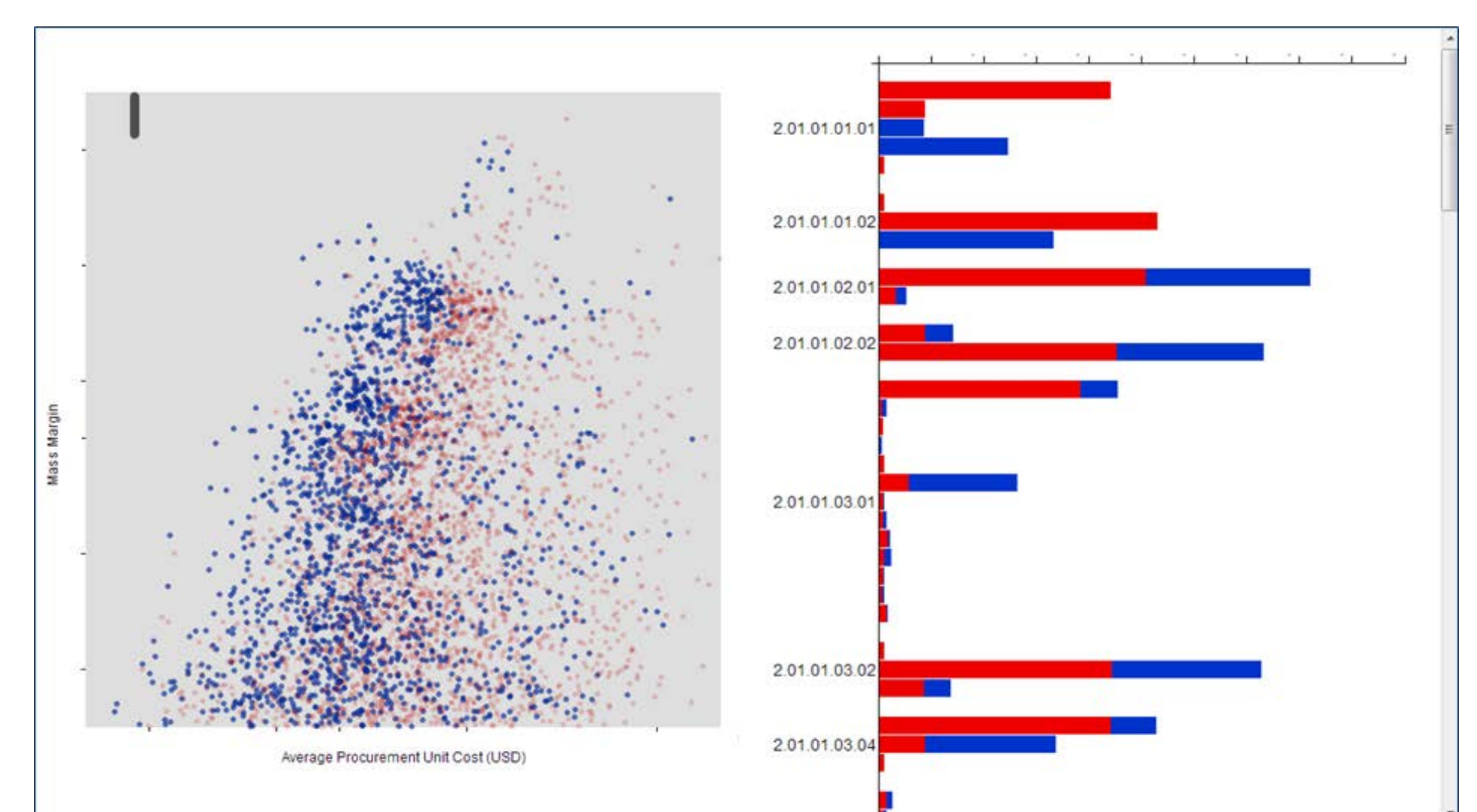
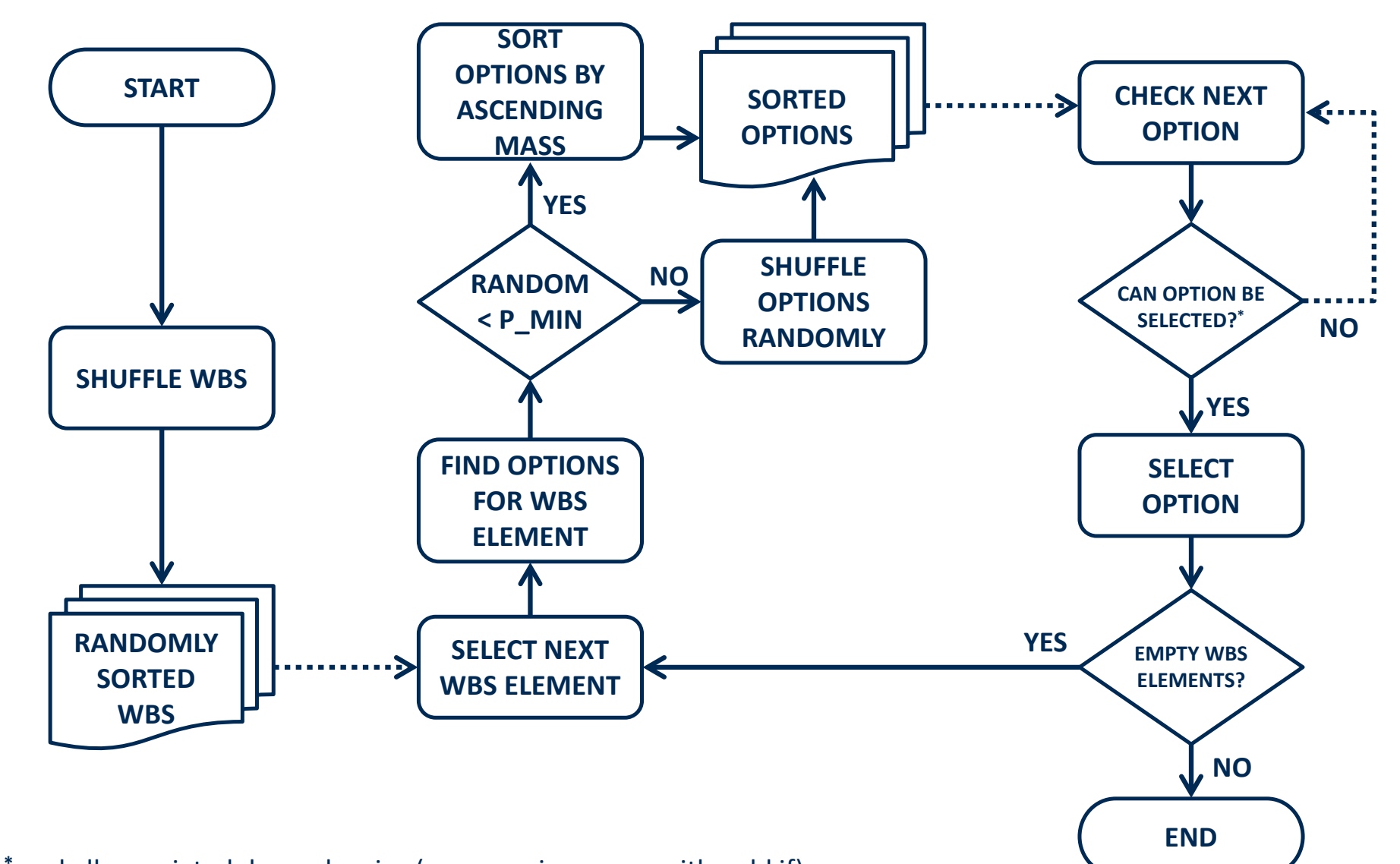
Build upon MARCORSYSCOM's investment in the Framework for Assessing Cost and Technology to build it into the comprehensive tradespace analysis and model-based systems engineering tool required by USMC.

Methodology

FACT offers a set of tradespace analysis tools in an integrated web environment. FACT has been utilized by the USMC to support the Amphibious Combat Vehicle (ACV) 2013 Design Analysis as well as the HMMWV Sustainment Modification Initiative. The FACT workflow has been informed by this experience, and new tools, models, and capabilities need to be developed to support future acquisition efforts.

Work to date has focused on making development of FACT by Government partners standardized. Initial backend work has restructured the database to put an Object Document Model in place, to enforce schema on the Mongo Database. Additionally, a REST API has been developed to offer a standardized format for accessing and manipulating the data within FACT. Currently, the FACT front-end is being rebuilt to take advantage of these backend improvements.

Other work is focusing on making FACT more versatile and robust in using available computing resources, to allow larger and more complex tradespaces to be explored if the hardware is available. Queueing and control systems are being put in place which makes the front-end more responsive and now stores all tradespace interactions for future retrieval and review. Furthermore, the Resource Description Framework is being leveraged which will offer new means to querying interactions on the data within FACT.



Contacts

- Daniel Browne
Georgia Tech Research Institute
Research Engineer II
Associate Head, Systems Engineering Software Applications Branch
daniel.browne@gtri.gatech.edu
404-407-7264

- Luis E. Velazquez (NH-IV)
Deputy Director, Modeling & Simulations Division
Systems Engineering, Interoperability, Architecture & Technology (SIAT)
MARCORSYSCOM
luis.velazquez@usmc.mil
703-432-3791