Overview

Military Logistics and transport planning is extremely challenging – especially in a theater of operations. Military requirements and environments further compound the already daunting complexities of peace-time transportation operations. The DRAM project, sponsored by U.S. Army Futures Command to enhance ammunition transportation management, has developed an extremely flexible, state-of-the-art logistics planning and execution monitoring system for theater military applications. DRAM is based on multi-agent system technologies originally developed by DARPA (the Cognitive Agent Architecture (COUGAAR)), and uses Artificial Intelligence techniques to implement adaptive planning and situational awareness, as well as automated response and active feedback.

Shared Living Plan
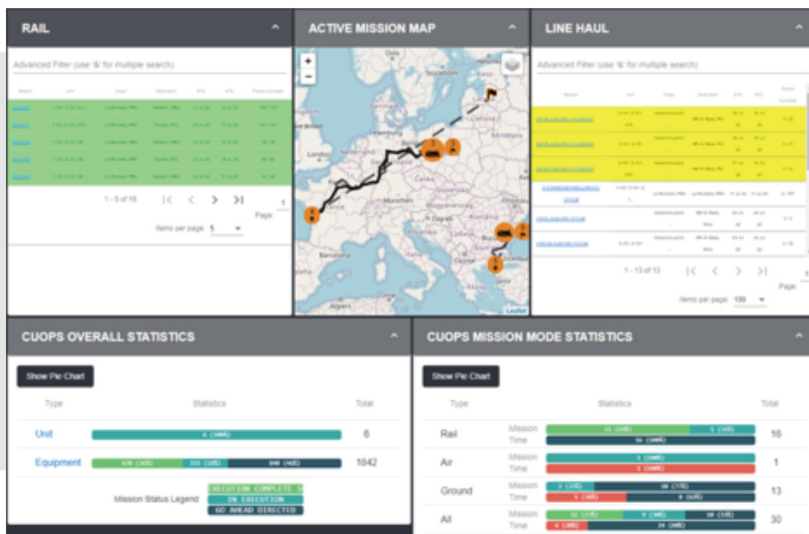
A foundational capability employed by DRAM is the Living Plan, a flexible and updatable computer (digital) representation of human-developed plans that can be collaboratively created and shared by the human-machine team. The Living Plan persists from mission conception to completion, and changes throughout execution, as required. The DRAM Living Plan allows for a shared understanding of mission goals, tasks and status across all echelons throughout the planning an execution process.

Mission Planning

DRAM automates much of the work associated with COA development and mission planning and helps synchronize movement operations by enabling virtual collaboration between planners, mode operators and operations managers. Stakeholders view tentative and approved transportation missions, confirm supportability or readiness, anticipate requirements and modify plans on the fly. DRAM evaluates and optimizes resource allocation based on mission parameters. One particularly useful feature of DRAM is planning of retrograde movements. These often overlooked requirements can easily be opportunistically planned when planning forward movements.
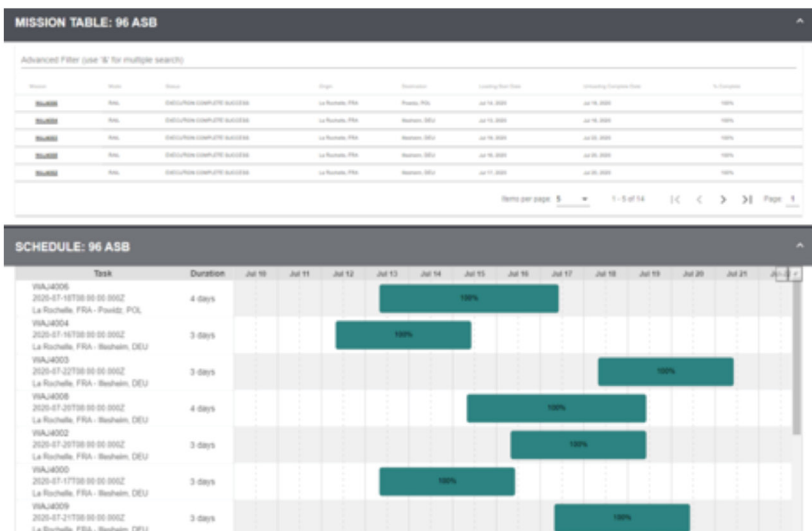
Situational Awareness

DRAM can receive situational reports from an unlimited number of sources and can establish extensive situational awareness and understanding. Using this awareness and understanding, DRAM can proactively notify operators if changes in battlespace conditions or equipment readiness affect current or future operations. Based on changes in circumstances, DRAM can automatically re-plan equipment, routing or other mission details.
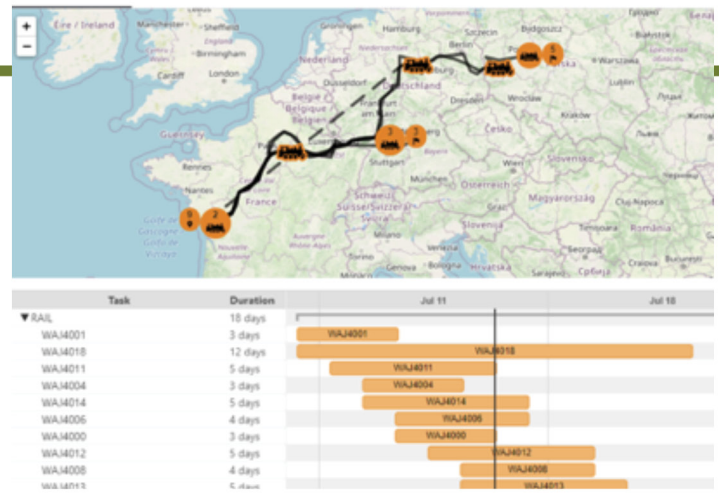

Route Creation and Management

Creating and managing routes, whether air, water, rail or ground routes, is a critical task in any theater. DRAM provides an intuitive mechanism for planners to create ground, rail, air and sea routes. In addition, DRAM can import routes from other sources. DRAM is designed to receive network characteristics and employ them in planning.

Execution Monitoring and Control

DRAM can receive geolocation and situation reports on active missions and display progress, battlespace events and other relevant information. In addition to receiving feeds from virtually any automated sensor, DRAM can generate schedules and electronic checklists that can be used to monitor mission progress. Operations personnel can quickly and easily understand and monitor the status of missions and battlespace conditions. DRAM allows for an unprecedented level of integration between logistics planning and operations.

U.S. Army Europe (USAREUR) Field Test

The 21st Theater Sustainment Command, USAREUR, is performing an extended field test of DRAM's planning and execution management capabilities. 21st TSC has validated DRAM's planning and execution capabilities during complex Reception, Staging, and Onward Movement operations. DRAM's map view, fed by the Department of Defense In-transit Visibility server, supports total asset visibility of lift assets (personnel, equipment and cargo) in a common operating picture format. DRAM has provided 21st TSC movement control entities the ability to efficiently synchronize, manage, de-conflict and share transportation plans between elements and echelons.
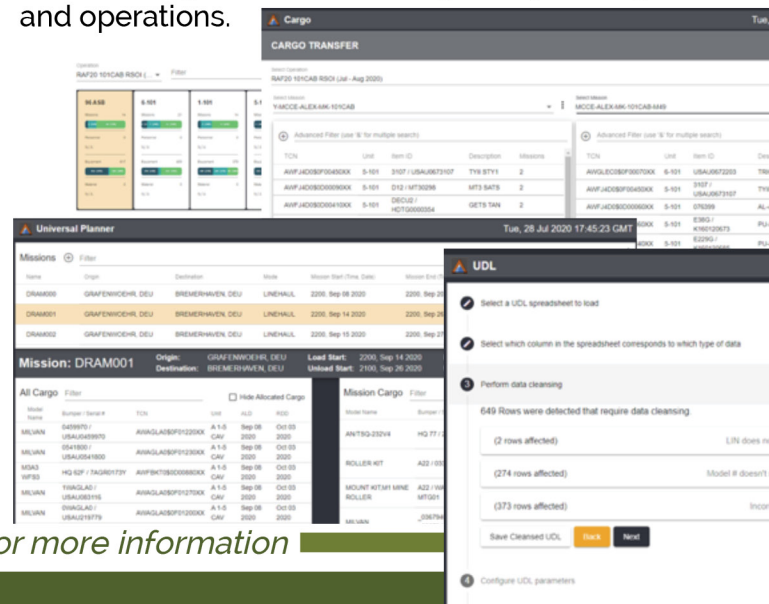
Contact Broc Perkuchin for more information