



Flowing Valued Information

Principal Investigator: Frank Mabry Ph.D.

Objective:

The major questions that our Flowing Valued Information Research strives to address are: (1) to provide a scientific basis for flowing valued information over a network, (2) advance the science for estimation of the relative value of information for goal-oriented behaviors and (3) to use these value estimates to dynamically adjust movement of data to maximize value of information moved over time.

Approach:

The project has begun to investigate means for dynamically valuing the information to be transmitted as well as means for dynamically adjusting the movement of the information to the time and place where it is needed. Our domain focus will be a platoon in a humanitarian assistance/disaster recovery scenario. Our approach is fourfold: (1) extend existing results in building a computable model of a commander's intent to include maintaining dynamic estimates of trust in the current state of meeting the intent and explaining the belief support associated with those estimates, (2) focus on the lowest tactical level to enable extending information models to include additional complexities in the area of operations (e.g. dynamics of social networks, status of economic, political, and infrastructure variables affecting desired operational outcomes and requirements for sharing the information with coalition forces, government agencies, and non-government agencies), (3) extend existing results in hybrid control theory to enable optimization of the value associated with movement of multimedia information available at the lowest tactical level across the networks available for movement of the information, and (4) extend existing efforts

in multi-processor systems on a chip (MPSoC) to support cognitive radio experiments which will apply the value optimization results to move valued information to the right place at the right time.

Impact:

The Army has been focused for several years on building next-generation combat systems which depend heavily upon increasing the quality of information available at the combat crew level (trading information for armor). Recent changes emphasizing that future combat vehicles become more effective in counterinsurgency (COIN) operations only increase the need for achieving information dominance. Our project is a long-range effort to create the science to enable building predictive models of the relative value of information available at the lowest tactical levels and enable movement of that information to the right place at the right time.