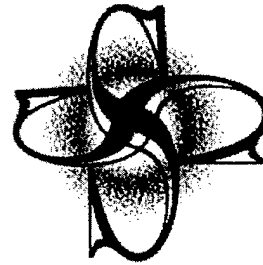




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# **Computational Models of Human Organization Dynamics**

## **Quarterly Report #6**

Sponsored by  
Defense Advanced Research Projects Agency  
Information Systems Office  
Computational Models of Human Organization Dynamics  
ARPA Order No. E495  
Program Code No. 6S10  
Issued by DARPA/CMO under Contract #MDA972-97-C-0001

**Period Covered: 6/1/98 – 8/31/98**

## ***Reporting Period***

This is the sixth quarterly report for the project: Computational Models of Human Organization Dynamics. This report covers the period from 6/1/98 through 8/31/98.

## ***Progress During Reporting Period***

Our technology is intended to support organizations as they gather information, build/refine models, and plan; further, it is intended to do so in situ (i.e., in support of ongoing operations). Users develop computational models of the physical and social situations they face, models that incorporate themselves; planning is the process of conducting experimental tests of alternative action programs for oneself via simulation of the overall physical and social system. But modeling is in service to effective action, not an end in itself. Hence we need a method to guide users so that they employ the organizational mapping, modeling, and analysis technologies most effectively given the particular context of use.

We call the methodology we have developed "Planning by Analysis". Planning by Analysis is used to decide how to distribute the attention of the organization among the tasks of planning, information-gathering, modeling, and behaving (executing plans). The method stipulates that users revise their models in an anomaly-directed way. In essence, the occurrence of anomalies, as well as their specific content, offers the data used to decide whether the organization should revise the kind and amount of attention it is paying to planning and execution versus to improving its understanding, in the hope of improved planning and action at a later time.

A decision-analytic version of this method can be developed by formally expressing the tradeoff between the options of acting now according to the best current plan, versus improving understanding now and then planning and acting later (under superior understanding). Within the latter option there are sub-options in the form of different combinations of information-gathering and modeling actions.

We also developed an information-operations variant of the non-combatant evacuation operation that we have developed to illustrate and test our technology. It introduces an important class of anomalies.

Finally, we interviewed experts at the EPA on hazardous materials incidents, and crisis response planning in general, to learn how they plan and conduct operations – and so to test the generality of our work. Planning by Analysis, and the technology suite, appear to be sufficiently expressive and powerful to serve the needs of hazardous materials response.

## ***Plans for Next Quarter***

Over the next quarter we plan to revise our technology to better support Planning by Analysis. We will re-implement the test scenario (non-combatant evacuation operation), extending it as required.

Organizational analysis – for intelligence development, for decision-making, for planning, etc. – is conducted by multiple individuals and/or groups that collaborate to develop their view, decision, plan, etc. With this in mind we plan to develop a first version of a group work architecture to support organizational analysis using our technologies.

## ***Equipment Purchases***

There were no equipment purchases this quarter.

### **Personnel Matters**

There have been no changes in the key personnel proposed for this project.

### **Meetings, Important Exchanges and Decisions**

We learned that Dr. Steven Flank would be leaving DARPA, that Dr. Dell Lunceford would be taking over as the contract's technical monitor.

### **Problems**

We have no problems to report at this time. We foresee no substantial risks to our ability to complete this project successfully, on time, and on budget.

### **Fiscal Status**

The table below summarizes the fiscal status for this contract and our projected spending over the next quarters.

Amount Currently Provided	\$749,647.
Expenditures and Commitments to Date	\$520K
Manhours Planned, Actual	Planned = 650      Actual = 657
Estimated Funds/Qtr to Complete Work	\$115K
Estimated Date of Completion	2/28/99

### **Distribution of this Report**

The following individuals/organizations comprise the distribution list for quarterly reports on this contract.

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