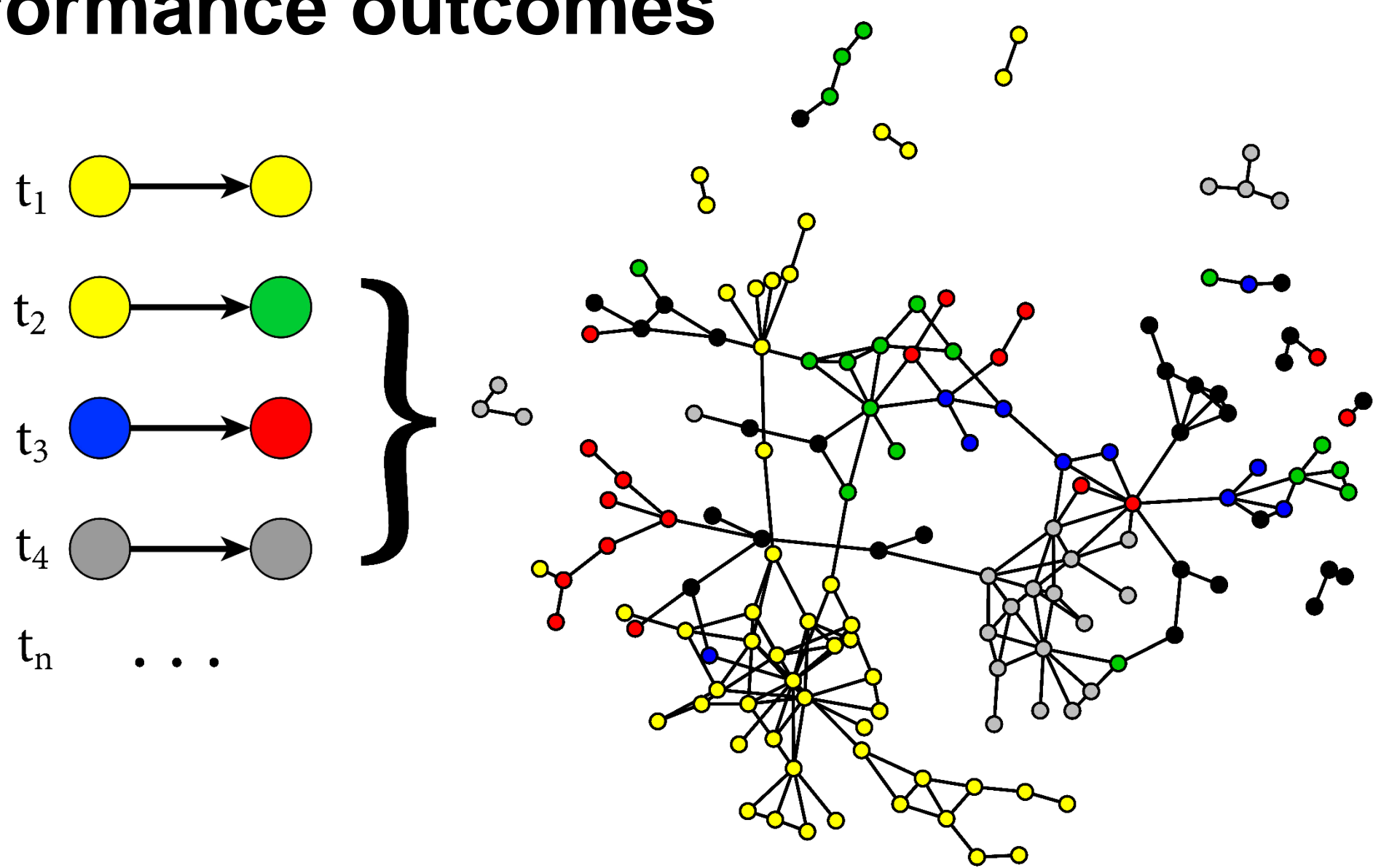


S&T Campaign: Human Sciences
Human Behavior
Human Variability

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Research Objective

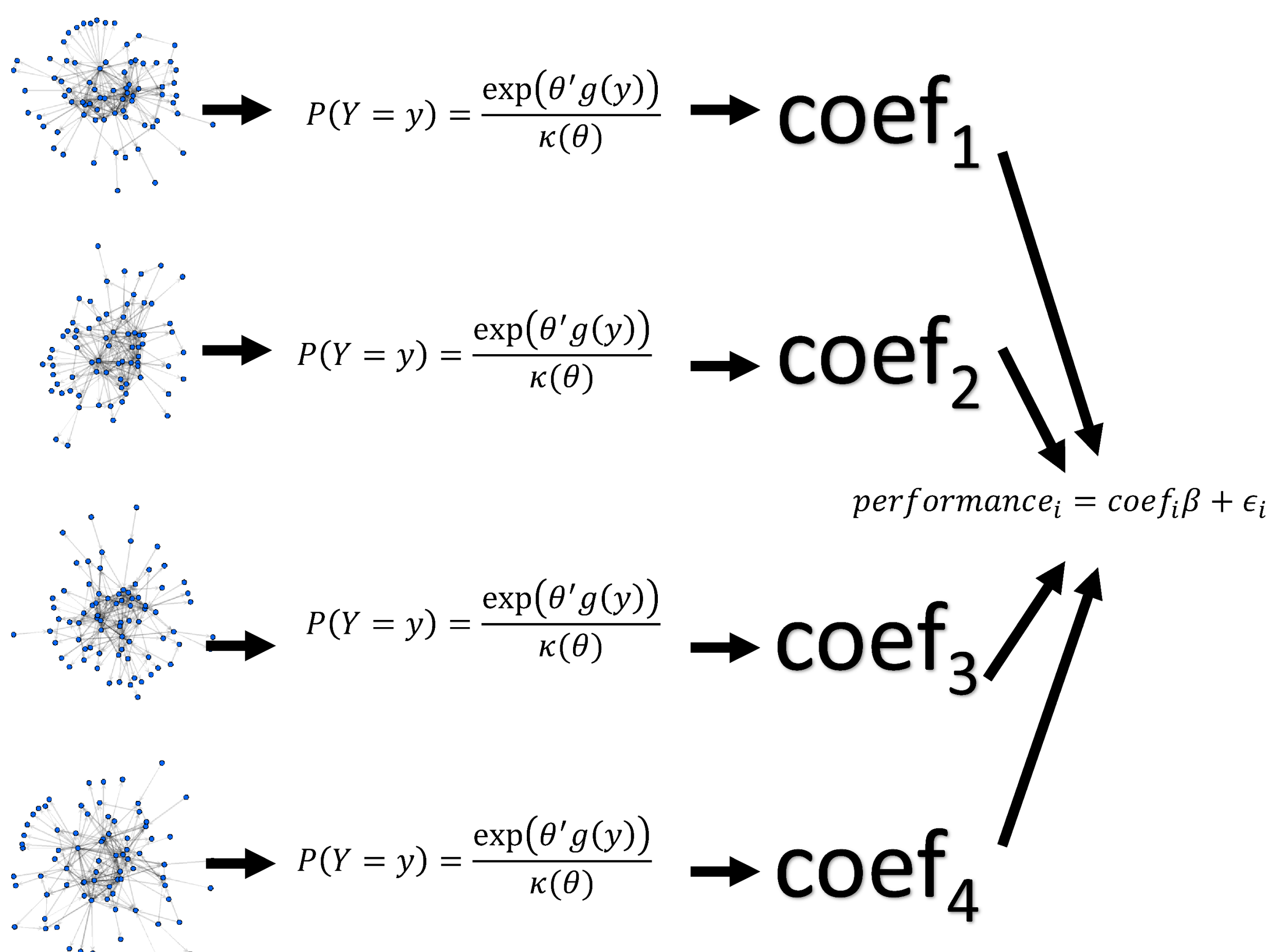
- Identify how the determinants of network structure predict group performance in real-world task environments
- 1) Use network models (ERGM, relational event model) to analyze multiple iterations of group structure, and then 2) use standardized coefficients from those models to predict group performance outcomes



The structure of interactions plays an important role in determining group performance.

Challenges

- **Data:** limited availability of dynamic interaction data of groups in real-world task environments, particularly across multiple iterations
- **Methods:** dynamic analyses provide a valuable but underutilized approach for understanding group phenomena



Our analytic strategy uses network model coefficients as predictors of group performance outcomes.

ARL Facilities and Capabilities Available to Support Collaborative Research

- Ongoing data collection from brigade and battalion staff elements during multi-week training exercises in conjunction with the National Training Center (NTC) and Mission Command Training Program (MCTP)
 - Continuous communication data coupled with participant survey data
- Innovation Commons to provide continuous data from individuals and groups in an extensively sensed environment
- Recent publications:
 - Buchler, Norbou, Sean M. Fitzhugh, Laura R. Marusich, Diane M. Ungvarsky, Christian Lebiere, and Cleotilde Gonzalez. (2016) "Mission Command in the Age of Network-Enabled Operations: Social Network Analysis of Information Sharing and Situation Awareness." *Frontiers in Psychology*. 7: 937.
 - Fitzhugh, Sean M. and Arwen H. DeCostanza (2017). "Organizational Tie (De)activation during Crisis" *Proceedings of the 2017 IEEE/ACM Conference on Advances in Social Network Analysis and Mining*.
- Results from our recent publications highlight the importance of situation awareness, organizational role, and structural cohesion for shaping network dynamics
 - How do these factors influence performance outcomes?

Complementary Expertise / Facilities / Capabilities Sought in Collaboration

- We welcome collaborators to aid in development of substantively or methodologically motivated approaches for developing novel, network-based performance metrics
- We also welcome collaborators to develop related research questions and work collaboratively using one of our existing data sets