

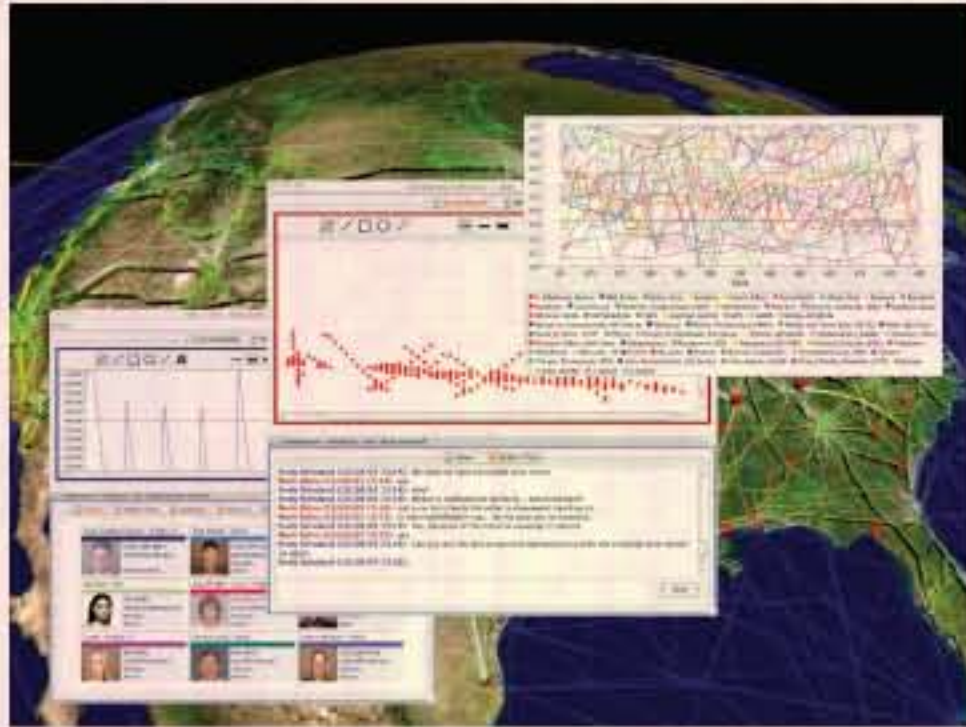
# Quantifiable and Objective Approach to Organizational Performance Enhancement



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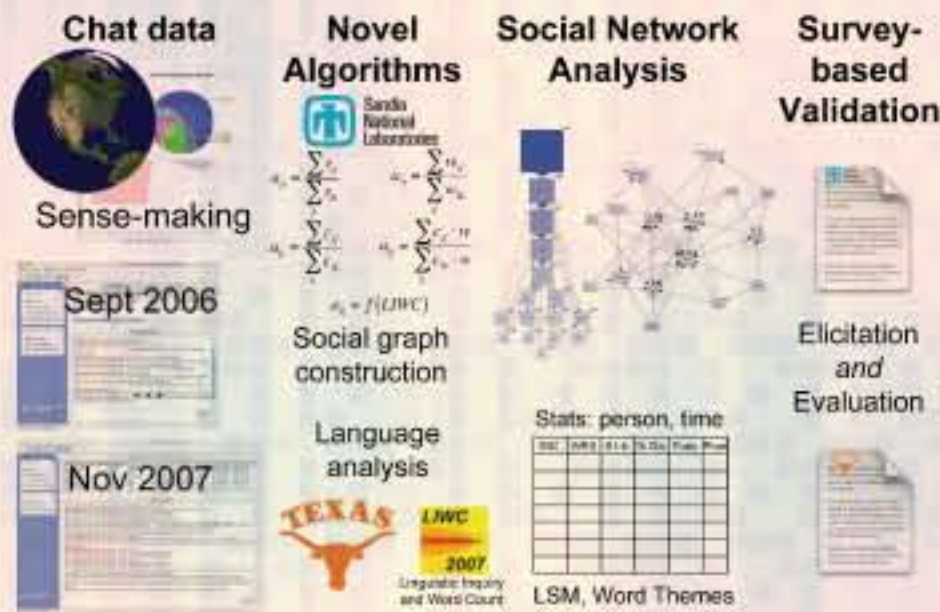
## Problem

*Distributed, computer-mediated, group sense-making under time constraints & external stressors.*

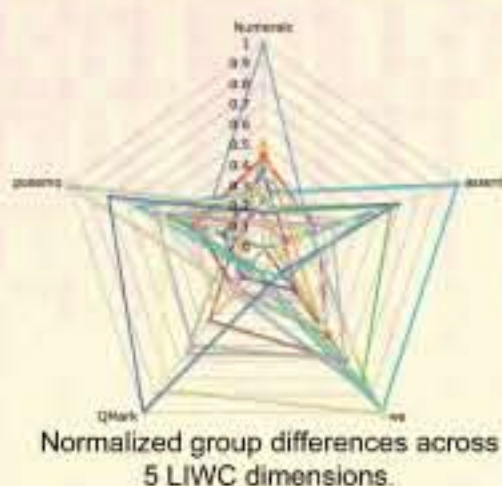


## Approach

*Investigate structural and psycholinguistic algorithms for quasi-experiment*

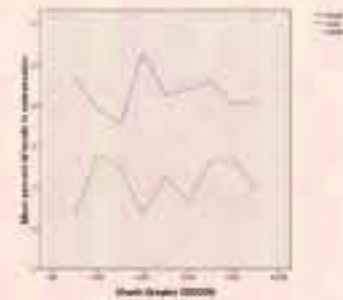


## Results



- UT's Linguistic Inquiry and Word Count (LIWC) focuses on function words (pronouns, prepositions, articles, conjunctions, and auxiliary verbs) that many psycholinguistic programs ignore.
- LIWC's initial results indicate
  - Group leader has low use of personal pronouns, as expected, and this remains stable over time.
  - Strong increase in negativity predicts departure.
  - Age/gender usage matches typical patterns.
  - Status appears to be a function of self-perceived competence in own field, even in nontechnical areas.

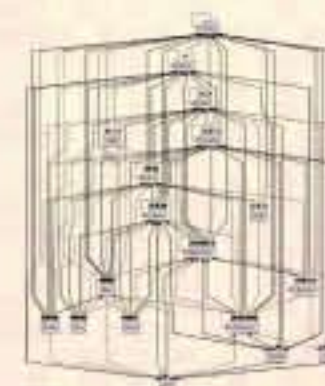
*Conversation serves social and analytic functions.*



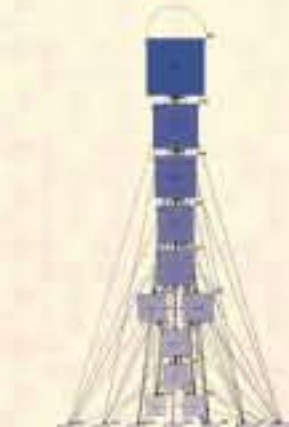
Percentage of words from each theme over time. Work-related conversations fluctuate roughly inversely with social conversations.

Shorter conversations (<50 words) coordinate and communicate both technical problems and broad ideas. More in-depth conversations focus on the models and results of the simulations.

*Dense interpersonal reference web supports Klein's view of known team roles/responsibilities.*



18 nodes, 175 edges, 9 self-loops  
 Links based on percent of directly addressed remarks:  $a_{ij} = \sum_k \frac{c_{ijk}}{c_{ij}}$

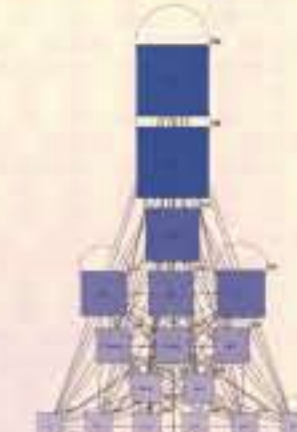


Occasional participants are less central, but job function matters.

*Conversational patterns illustrate team cognition.*



18 nodes, 247 edges, 15 self-loops  
 Links based on percent of co-participation in conversations:  $a_{ij} = \sum_k \frac{c_{ijk}}{c_{ij}}$



Verbally mediated cognition is participative and shared.

## Significance of Results

- Empirical results reveal both fine-grain structure (clusters/cliques) and work-related discourse across the group, in concordance with established theory.
  - Lewin (1936) — “The environment that really matters to group members is the perceived environment.” (emphasis original)
  - Mayo, Homans, Warner, Moreno (1930s–1940s) — “... people's informal social relations tied them into cohesive sub-groupings that had their own norms, values, orientations and subcultures, and that may run counter to the ‘official’ or formal social structure.” [Quotes from Scott (2002)]
- Results highlight the synergy between psycholinguistic and communication graph analyses.
  - Moves focus of psycholinguistic analysis from attribute to focused and specific relational study.
  - Combined comparison to traditional survey-elicited measures an important cross-validation step.
  - Techniques may benefit social and organizational network analyses across multiple domains.

