



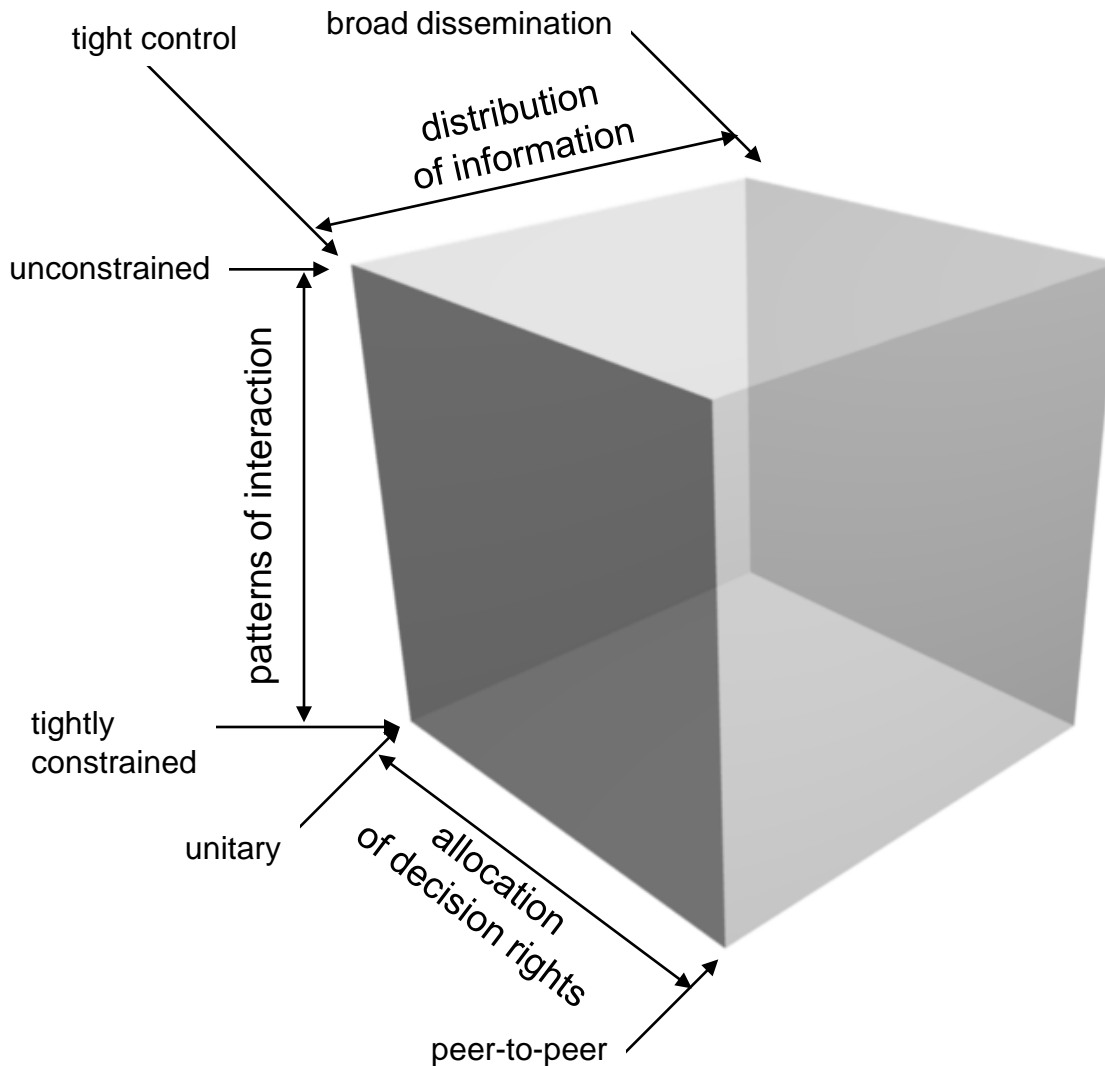
Evidence Based Research, Inc.

## Capabilities and Experience

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# C2 Approach Space and The NCO Value Chain



## NCO Value Chain

**Networked Organization**

Enables

**Enhanced Information Sharing**

Enables

**Better Situational Awareness**

Enables

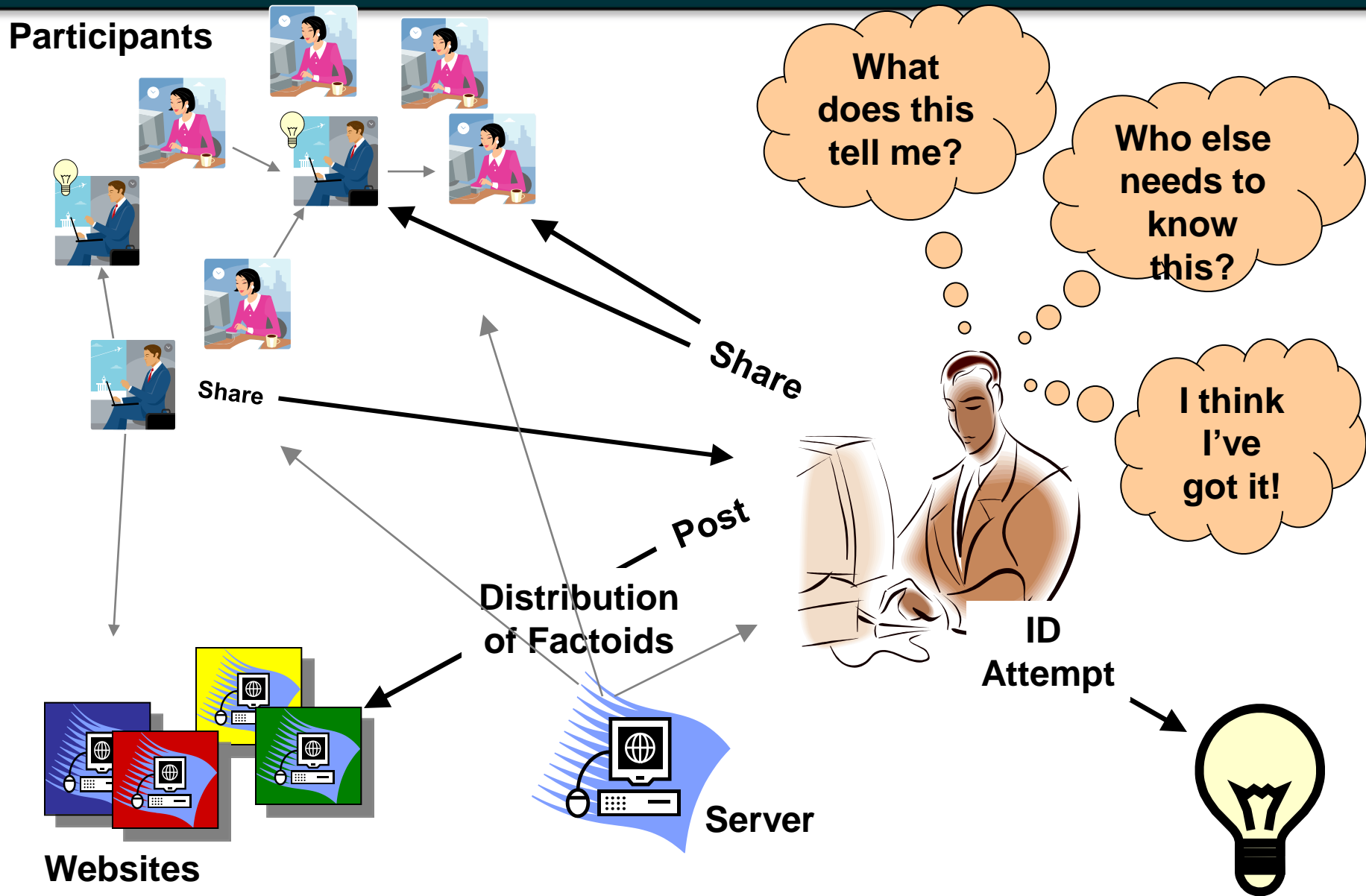
**Increased Effectiveness**

# ELICIT Provides a Capability for Instrumented Experimentation on Trust

- ELICIT = Experimental Laboratory for Investigating Collaboration, Information-sharing, and Trust
- U.S. DoD (OASD/NII) Command and Control Research Program (CCRP) sponsored the design and development of the ELICIT platform to facilitate experimentation focused on information, cognitive, and social domain phenomena
- Initial applications focus on a comparison of traditional hierarchical and edge C2 approaches
- ELICIT has been used by researchers to investigate the cognitive and social impacts of C2 approaches and organizational structures (e.g., information sharing, trust, shared awareness, and task performance)
- ELICIT has been used by educators to facilitate discussion of command and control concepts, approaches, and processes (e.g., alternative structures, information flows, and distributions of information)

ELICIT is a Web-based Software Platform with an Agent-Based Capability

# ELICIT Processes



- Worked with UCLA to combine efforts using the ELICIT experimentation platform and functional magnetic resonance imaging (fMRI) technology to explore the levels of trust and distrust associated with different types of message origin and content and the behaviors associated with them.
  - Transaction networks resulting from in-group source affiliation facts have high density and are well connected.
  - Actions of participants are most similar when deciding how to share facts from an adversary source and whom to share such factoids with.
- Built simple representations of trust using the Agent-based ELICIT software platform.
- Built a simulation to learn how information spreads through different populations to investigate trust and the propagation of information promoting fraudulent activities.
  - Modeled multiple fraudulent activities, requiring different amounts of information, spreading in cities of varied sized and demographic composition.
  - Conducted research on how socio demographics such as gender, race, age, parental status, income, and education affect an individual's propensity to share information.
  - Identified effective intervention methods by calculating how susceptible each simulated city was to the fraud schemes, loss due to fraudulent acts, to what extent the information filtrated through the population, and decisions made.

# Key Elements of an Operationalized Trust Framework

- **Types of entities that can exhibit trust:** These include humans, collections of humans (organizations, networks, societies), and non-humans (machines, software).
- **Types of entities that can be trusted:** In addition to the above, trust can be placed in information, processes, and in particular attributes or components of humans, collections of humans and systems (i.e., it is possible to have trust in part of a system, but not a system as a complete entity).
- **Classes of trust relationships:** In addition to the different kinds of truster/trusted pairs that can be composed these would include the different kinds of trust (e.g., conditional, unconditional, attitudinal, specific, behavioral, reciprocated, etc., as well as mistrust and distrust)
- **Levels at which trust-related phenomena manifest:** Depending on the nature of the entities involved, trust-related mechanisms may take place at different levels of representation of the system.

Metrics and measurement approaches are needed for each level and class of trust relationship.

# Questions or Comments ?

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