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14th ICCRTS “C2 and Agility”

Emergent Leadership on Edge Organizations: Building Trust and Cooperation in the context of ELICIT Experiments

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OBJECT OF STUDY

- Delineate possible variables that explain the emergence leadership in Network Centric environments (NCE), using ELICIT as platform for experimentation.
- Analysing the relationship between personality, individual and collective characteristics with the emergent leadership in hierarchical and edge configuration.
- Contributing to the definition of a model of networking leadership and explain the leadership emergence

AGENDA

- Theoretical Background
- Method
- Results
- Conclusion



Leadership

Leadership represents an important element for groups – one necessary for directing behaviors in pursuit of common goals (Hoyt and Blascovich 2003).

Leadership Emergence

Emergent leaders are active participants who may be perceived by the group as possessing something (e.g., a trait or group of traits) that works to influence the group. (Lord, 1986)

Virtual Teams

“...work on virtual teams suggests that leadership, in this electronic context, might be better viewed **as a collective effort** distributed among team members characterized by the **sharing and rotating of leadership roles**”. (Zigurs 2003; Avolio 1999).

E-leadership

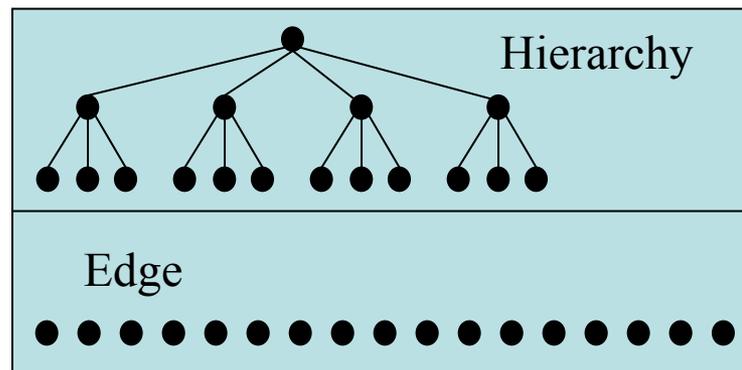
“defined as a **social influence process mediated by technology** to produce a change in group attitudes, feelings, thinking, behaviors, and/or performance (Avolio et al. 2001)

“found **team member involvement** to be the strongest **predictor** of team performance suggesting that a more internal **focus on member behaviors**, may provide insight into effectively facilitating self-managed team processes”. (Cohen, Ledford, and Spreitzer, 1996)

Levels of explanations of the performance differences



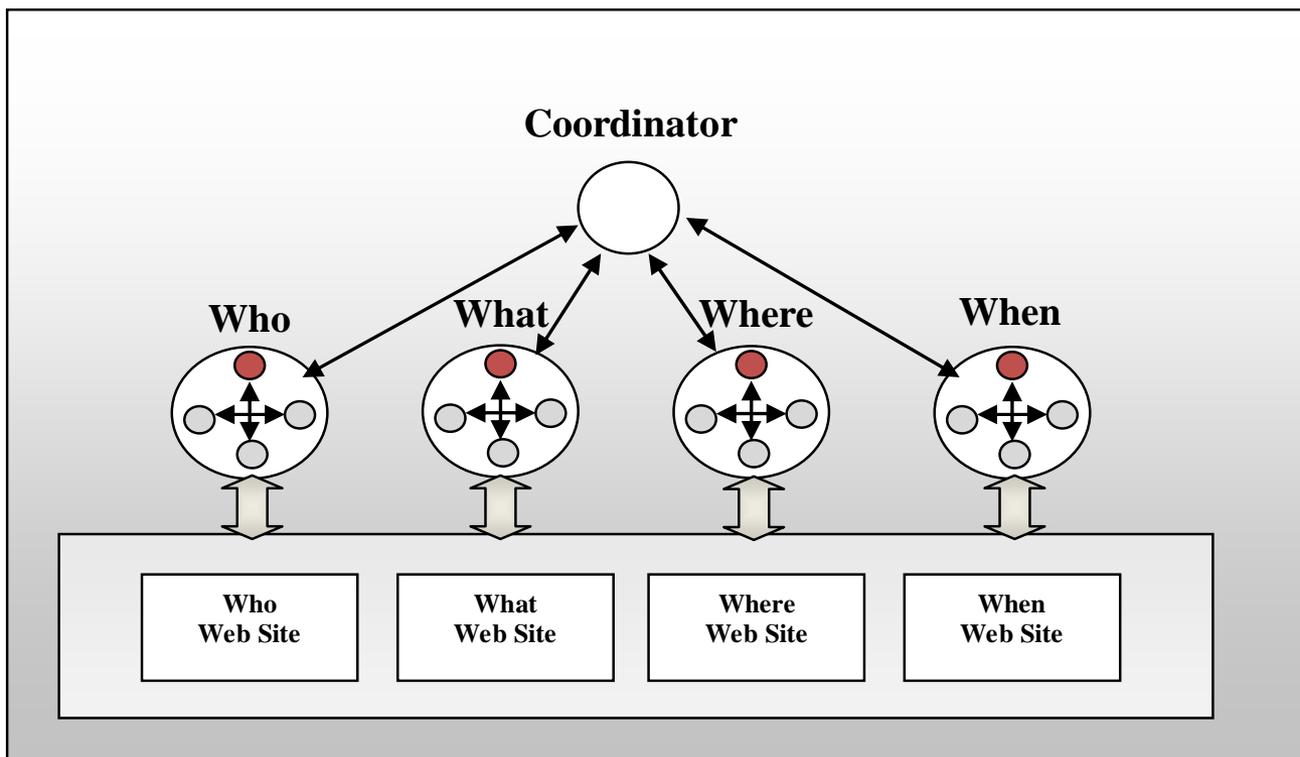
ELICIT is a set of research and experimentation platforms developed for the CCRP for the purpose of facilitating the exploration of issues related to C2 approach, information sharing, collaboration, and trust. ELICIT provides an instrumented network-centric collaborative environment for 17 individuals.



- The goal of each set of participants is to build situational awareness and identify the who, what, when, and where of a pending attack
- Participants can share factoids directly with each other or post factoids to websites
 - Participants build awareness by gathering and analyzing factoids and interacting with one another
 - No one is given sufficient information to solve their assigned problem without receiving information from others

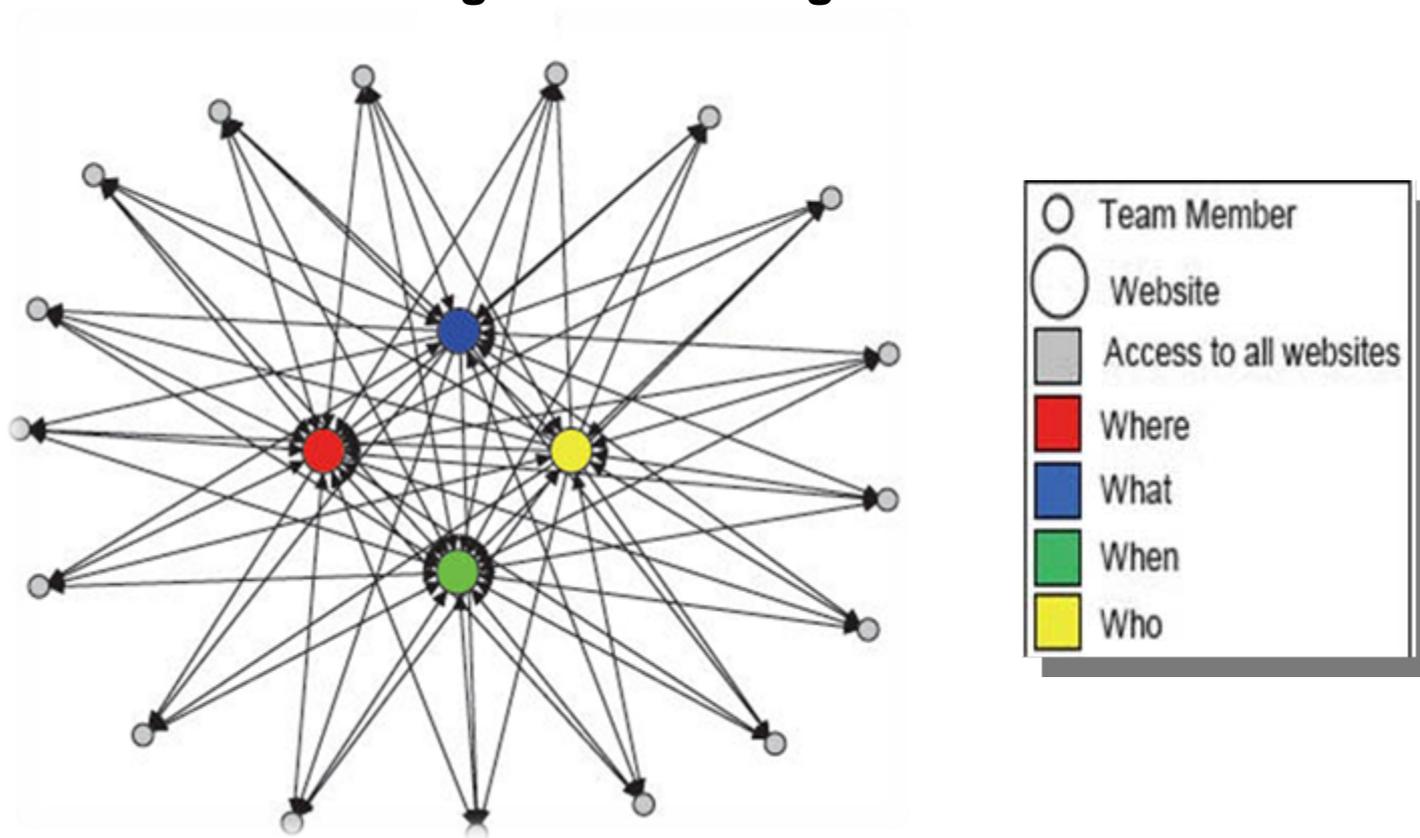
DESIGN APPROACH:

ELICIT Configuration for Hierarchical Level



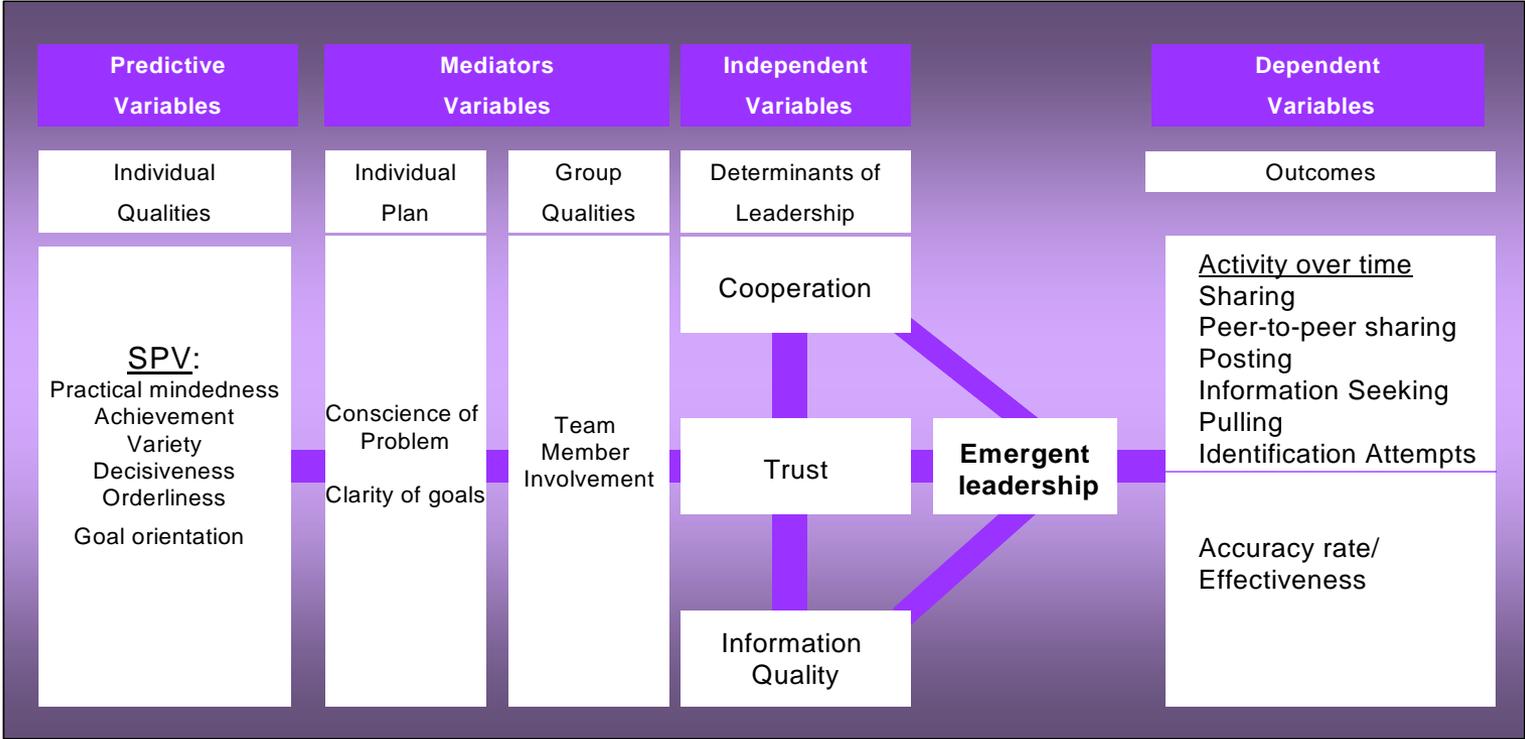
DESIGN APPROACH:

ELICIT Configuration for Edge Level





The mediating effects of several perceived qualities on leadership emergence



Hypothesis 1: The Conscience of Problem is positively related to the Leader emergence in Edge mode.

Hypothesis 2: The Team member Involvement is positively related to the Leader emergence in Edge mode

Hypothesis 3: The Cooperation/Collaboration and Trust in Information are positively related to the Leader emergence in Edge mode.

Hypothesis 4: The Edge Mode will supply a higher level of Cooperation/Collaboration and Trust in Information than the hierarchical

Hypothesis 5: The Edge Mode will supply a higher level of Effectiveness than the hierarchical mode.



METHOD

Participants and Procedure

85 cadets of the 3th year of the Military Academy. Individual participate in group of seventeen for a total of five teams.

Data will be compiled in three phases:

1. Application of *Gordon's Survey of Personal Values* (Gordon, L. V., 1993; Rocha, A, Galvão, S. & Ferreira, C., 2001) to the cadets in order to obtain a series of personal and personality data.

2. Run of the ELICIT experimentation.

3. Application of the *Multifactorial Leadership Questionnaire: Collaboration, Information Quality and Trust*

Conscience of the Problem (3 items, $\alpha = .76$)

Team member involvement (four items, $\alpha = .86$)

Cooperation/Colaboration (6 items, $\alpha = .83$)

Trust in Quality of information (10 items, $\alpha = .89$)

All participants will be given the same instructions, with respect to the conditions and norms of application of the various tests applied.



**PERSONAL TRAITS
 INDIVIDUAL DIFFERENCES**

Regression analyses of Values as predictive variables

Items	Conscience Problem		Leader Emergence		Leader Effectiveness	
	r	β	r	β	r	β
Practical Mindedness	.00	-.05	.08	.24*	-.07	.01
Achievement	.02	.04	.05	-.01	-.20	.19
Variety	-.23	-.13	-.27*	-.20	.09	.20
Decisiveness	-.08	-.16	.04	.18	.02	.12
Orderliness	.01	-.15	.00	.02	.04	.06
Goal orientation	.40**	.34**	.20	.15	.09	.25*

* $p < .05$; ** $p < .01$



**MEAN DIFFERENCES BETWEEN
 HIERARCHICAL AND EDGE MODE**

	Mode	Mean	Std. Deviation	t-value
Cooperation/Collaboration	Hierarchical	3,36	,29	-4,0**
	Edge	3,57	,38	
Trust in Information	Hierarchical	3,24	,25	-3,78**
	Edge	3,43	,38	
Effectiveness	Hierarchical	,27	,41	-3,56**
	Edge	,46	,28	

* $p < .05$; ** $p < .01$

Hypothesis 1: The Edge Mode will supply a higher level of Cooperation/Collaboration and Trust in Information than the hierarchical

Hypothesis 2: The Edge Mode will supply a higher level of Effectiveness than the hierarchical mode.



**MEAN DIFFERENCES IN FUNCTIONS
 BETWEEN HIERARCHICAL AND EDGE MODE**

Mode Effectiveness	Function	Mean	Std. Deviation	t-value
Hierarchical Effectiveness	Collaborator	.27	.42	-.12
	Formal leader	.28	.38	
Edge Effectiveness	Non Emergent leader	.43	.27	-.15
	Emergent leader	.50	.28	

* $p < .05$; ** $p < .01$

The team leader take the role of a facilitator of team effectiveness rather than being the dominant contributor to team performance

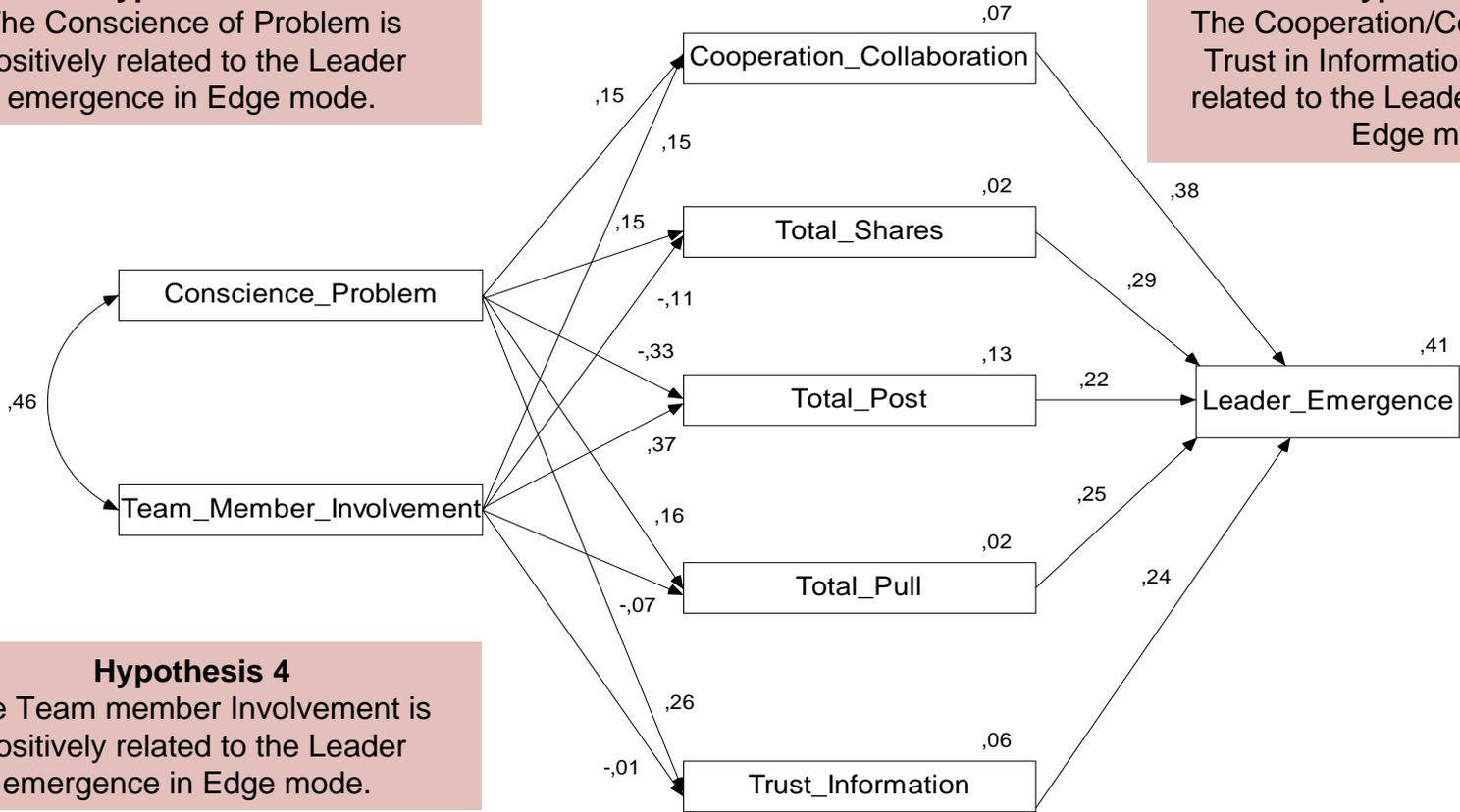


PATH ANALYSES MODEL OF LEADER

Hypothesis 3
 The Conscience of Problem is positively related to the Leader emergence in Edge mode.

Hypothesis 5
 The Cooperation/Collaboration and Trust in Information are positively related to the Leader emergence in Edge mode.

Hypothesis 4
 The Team member Involvement is positively related to the Leader emergence in Edge mode.





CONCLUSIONS

Individual differences are associated with Leadership Emergence.
The value that stands out is Practical Mindedness.

The Edge mode supplies a higher level of Cooperation/Collaboration,
Trust in Information and Effectiveness than the hierarchical mode
stressing the role of collaboration in improving performance considered
as network-centric or network-enabled

The significant relation between the Conscience of the Problem and
Team member Involvement stresses that the awareness of the
situation is crucial for a shared understanding of the situation, being an
essential condition for leader emergence.

Emerging as a leader in Edge Mode implies to be proactive in terms of
cooperation, collaboration and sharing of trustful information.



THANK YOU FOR YOUR ATTENTION