Measures of Merit and Measures of Performance for Command and Control Networks

A Methodology

C2 Symposium Heidelberg

June 2006

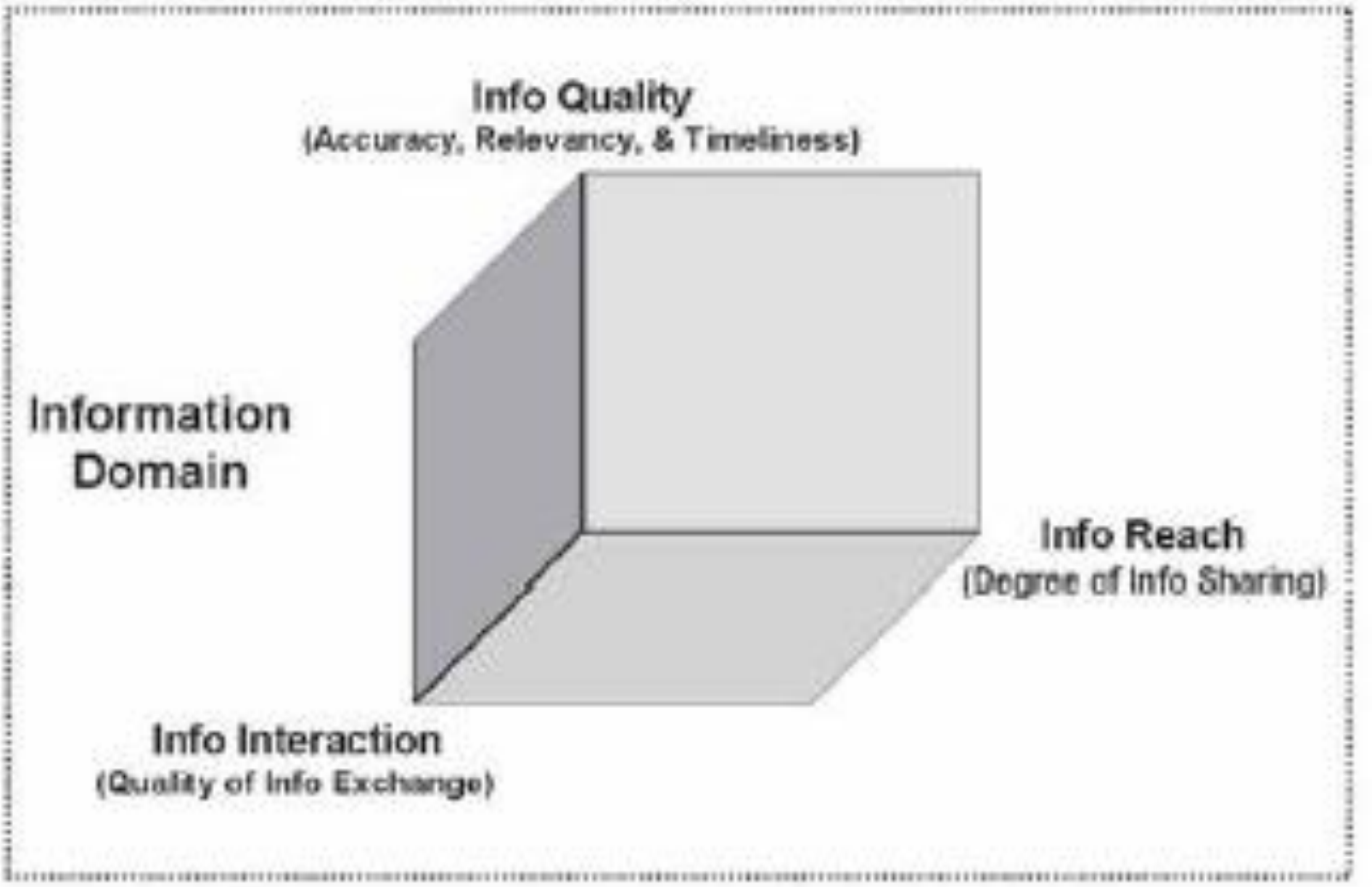
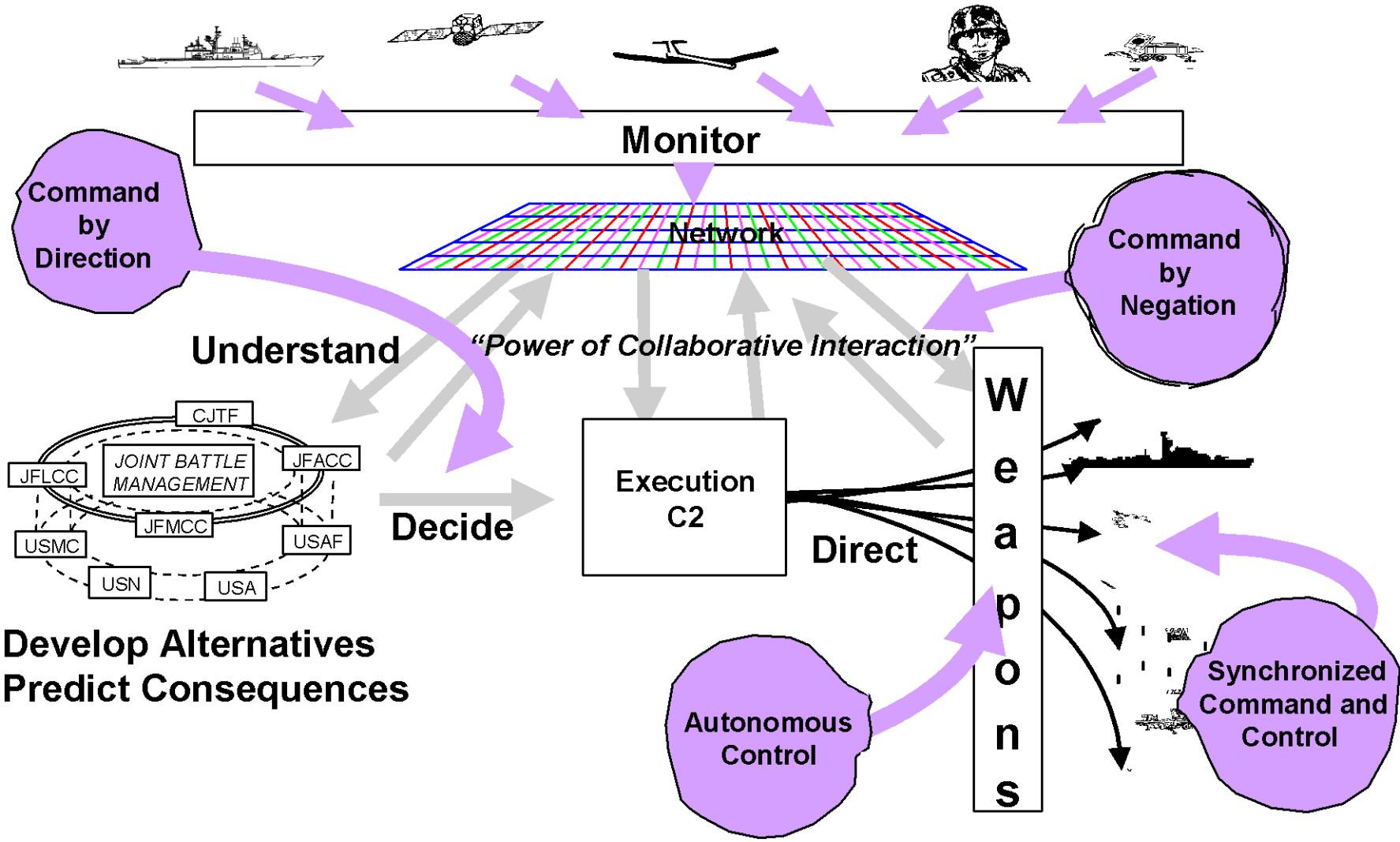


Diagram from http://www.au.af.mil/info-ops/iosphere/iosphere_spring05_romanych.pdf

Networks Can Enable C2 Processes

How do you measure the performance and effectiveness?



C2 Process Performance Objectives

Monitor: **Does the decision maker have the awareness on the situation he needs?** **Does he have confidence in the awareness?**
Understand: **Does the decision maker understand the situation?** **Can the decision maker retain and accumulate his understanding?**
Develop Alternatives: **How many possible valid alternatives did they develop?** **What was the degree of variety in the alternatives?**
Predict Consequences: **Did they accurately predict the possible outcomes?**
Decide: **How long did it take the decision maker to make the decision?** **Did the decision maker make the best decision?**
Direct: **How long did it take to implement the decision?** **Was the decision implemented as intended?**
Collaborate: **What level of collaboration was used in each of the above functions?** *** Measure these throughout the organization for different C2 processes**

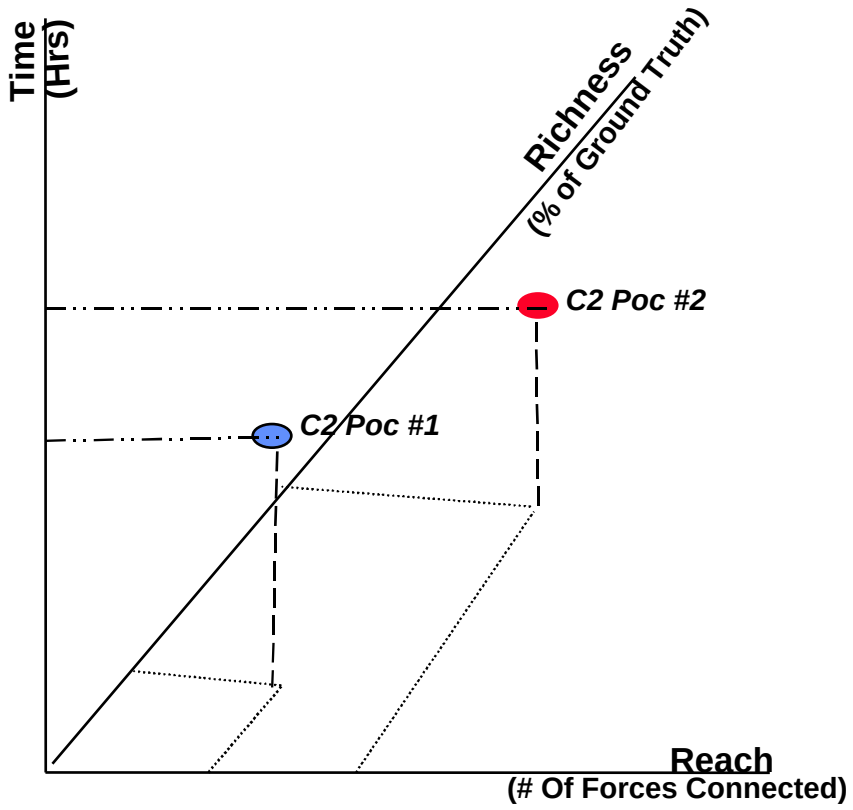
Representative MOP's for C2 Performance Objectives

Monitor	**Accuracy**
Understand	**Time** **Accuracy**
Develop Alternative Actions	**Number** **Accuracy**
Predict Consequences	**Accuracy**
Decide	**Time** **Accuracy**
Direct	**Time** **Accuracy**
Collaboration	**Time (to decide; to coordinate)** **Accuracy** **Interdependencies**

C2 Process Evaluation
Sample Comparison Analysis

	C2 Process #1	C2 Process #2
MOP: Richness Value	% of Ground Truth	% of Ground Truth
MOP: Reach Value	# of Forces connected	#' of Forces connected
MOP: Time	Hrs	Hrs
MOE: Mission Objectives Met	# Objectives Met	# of Objectives Met
MOE: Time to Meet Objectives	Hrs	Hrs
MOE: Loss/exchange Ratio etc.	Ratio	Ratio

Example of Graphing
MOP Aggregate Performance



Example of Graphing
MOP and MOE Aggregate Evaluation