

# ***Sailing the 'Seven Cs' of Interoperability***



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This brief is  
**UNCLASSIFIED**



# The <sup>8</sup> Cs of Interoperability

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**Command**

**Control**

**Cooperation**

**Coordination**

**Collaboration**

**Communication**

**Confidentiality**

**Connectivity**



## *The 8 Cs of Interoperability*

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**Command**

**Control**

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**Communication**

**Confidentiality**

**Connectivity**



## ***Interoperability Tier Descriptions***

### **Command**

Directed authority to accomplish a mission

### **Control**

Directed actions to accomplish a task or achieve an effect

### **Cooperation**

Mutual decisions and actions to improve performance

### **Coordination**

Mutual decisions and actions to avoid interference

### **Collaboration**

Give and take to exchange ideas and negotiate positions

### **Communication**

Processing Ability, Display Clarity, Language, Culture

### **Confidentiality**

Protection, Encryption, Trust

### **Connectivity**

Physical Links, Technical Protocols, Capacity, Order



# Interoperability Tier Grouping

OPERATIONAL

**Command**

Directed authority to accomplish a mission

**Control**

Directed actions to accomplish a task or achieve an effect

SOCIAL

**Cooperation**

Mutual decisions and actions to improve performance

**Coordination**

Mutual decisions and actions to avoid interference

**Collaboration**

Give and take to exchange ideas and/or negotiate positions

TECHNICAL

**Communication**

Processing Ability, Display Clarity, Language, Culture

**Confidentiality**

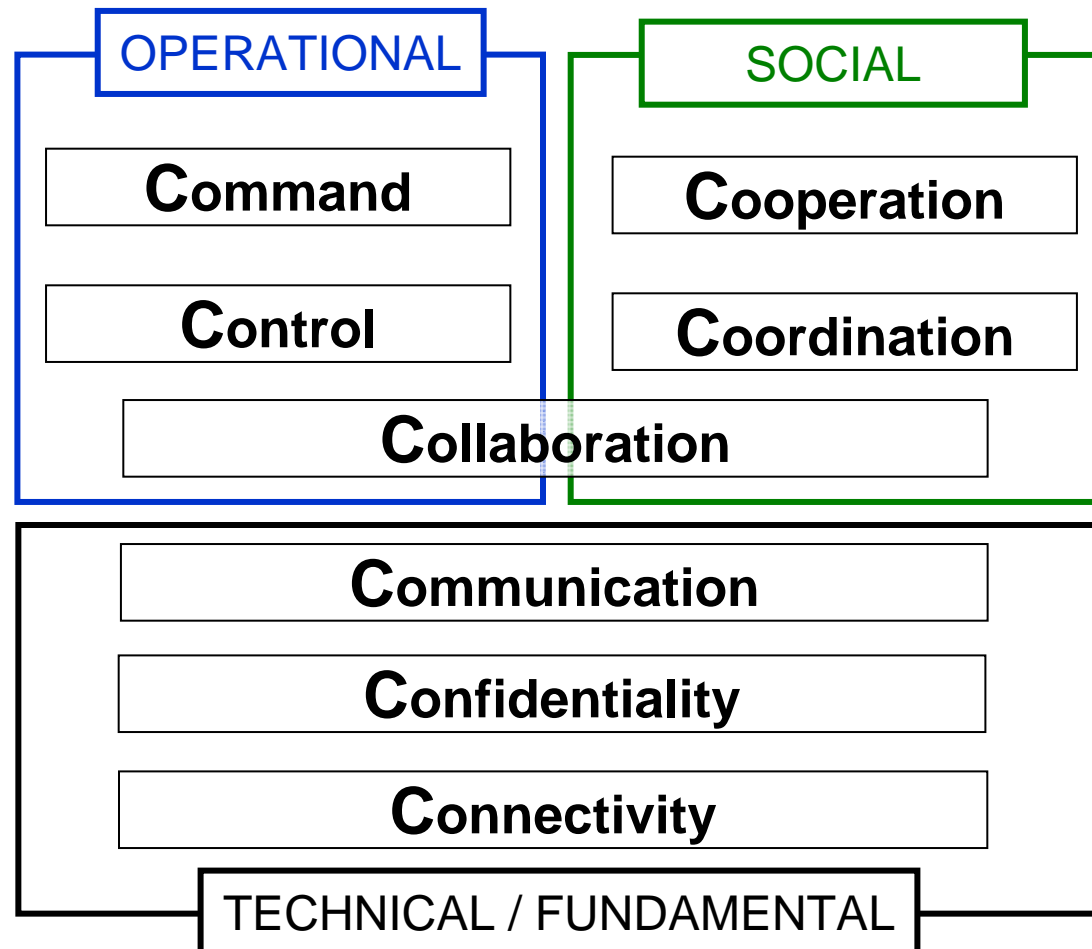
Protection, Encryption, Trust

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# Interoperability Group Relationships





# ***Assessing Interoperability***

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**Connectivity**

## **Interoperability Assessment must:**

- **Include what entities desire inter-operation (the set or community)**
- **Include what tier of inter-operation is addressed (which “C’s”)**
- **Address the importance of the inter-operation tier**
- **Assess the interoperability solutions (e.g., technical, fundamental, social, procedural)**
- **Build upon the fundamental relationships of the tier (the “C’s”)**



# Illustration: Interoperability Assessment Structure

<i>Joint Interoperability</i>	<i>Army</i>	<i>Navy</i>	
<i>Combined Interoperability</i>	<i>U.S.</i>	<i>Singapore</i>	
<i>Interagency Interoperability</i>	<i>USPACOM</i>	<i>ODA</i>	
	<b>Command Node A</b>	<b>Command Node B</b>	<b>Interoperability</b>
<b>Command</b>			
<b>Control</b>			
<b>Cooperation</b>			
<b>Coordination</b>			
<b>Collaboration</b>			
<b>Communication</b>			
<b>Confidentiality</b>			
<b>Connectivity</b>			





## Simple Example Assessment of Non-Interoperability

	Command Node A	Command Node B	Technical Interoperability	
			0%	
<b>Command</b>			↑ Doesn't matter ↓ 0% 100%	
<b>Control</b>				
Cooperation	NOT APPLICABLE			
Coordination	NOT APPLICABLE			
<b>Collaboration</b>				
<b>Communication</b>	Solution 4 ←	→ Solution 4		→ Doesn't matter
<b>Confidentiality</b>	Solution 2 ←	→ Solution 3		→ 0%
<b>Connectivity</b>	Solution 1 ←	→ Solution 1		→ 100%



## Example Assessment of Interoperability Achieved

	Command Node A	Command Node B	Technical Interoperability	
			100%	
<b>Command</b>			↑	
<b>Control</b>				
Cooperation	NOT APPLICABLE			
Coordination	NOT APPLICABLE			
<b>Collaboration</b>				
<b>Communication</b>	Solution 4 ←	→ Solution 4		→ 100%
<b>Confidentiality</b>	Solution 2 ←	→ Solution 2		→ 100%
<b>Connectivity</b>	Solution 1 ←	→ Solution 1		→ 100%



## **Conclusion:** **Interoperability – Be Clear and Consider the Tier**

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TECHNICAL

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*Eight*  
**Sailing the ~~'Seven Cs'~~ of  
Interoperability**



**Questions & Discussion**