



# **NDIA Disruptive Technologies Conference**

## **Supporting the Warfighter: Building a Robust, Joint Triad Network**

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Joint Staff J8 /  
United States Joint Forces Command J8F**

**Command and Control Functional Capabilities Board**



# *Purpose*



**Inform industry of Joint Command and Control (C2) Capability Gaps as industry develops future C2 solutions in support of the warfighter across the range of military operations**



# *US Joint Forces Command (USJFCOM)*



- C2 Capability Portfolio Manager -- Manage designated Joint C2 portfolio programs, systems, and capabilities across the whole spectrum of doctrine, organization, training, material, leadership and education, personnel, and facilities
- Delegated authority to manage & recommend approval to Joint Requirements Oversight Council (JROC) for Command and Control portfolio
  - C2 JCB – Makes recommendations on JROC interest documents and assists JROC in carrying out its duties and CJCSI 3170.01G responsibilities
  - C2 FCB -- Integrates stakeholders views on C2 concept development, capabilities planning, and force development to ensure U.S. military can execute assigned missions

# Commercial vs DoD "Tactical Edge"

## The Physics of Net-Enabling



IP  
Internetwork  
Optical Fiber  
10 Gbps

Free  
Space  
Optics  
1.1 Gbps

**DoD "Tactical Edge"**  
**No Infrastructure**

Disconnected, Intermittent or  
Low Bandwidth (DIL) User

STD-CDL  
A-CDL  
BE-CDL  
274 Mbps

N-CDL  
137  
Mbps

ATDL

VMF IDM 2 Mbps  
<16 Kbps

TCDL  
10-45  
Mbps

Link 16  
<256 Kbps

**Cellular Broadband**

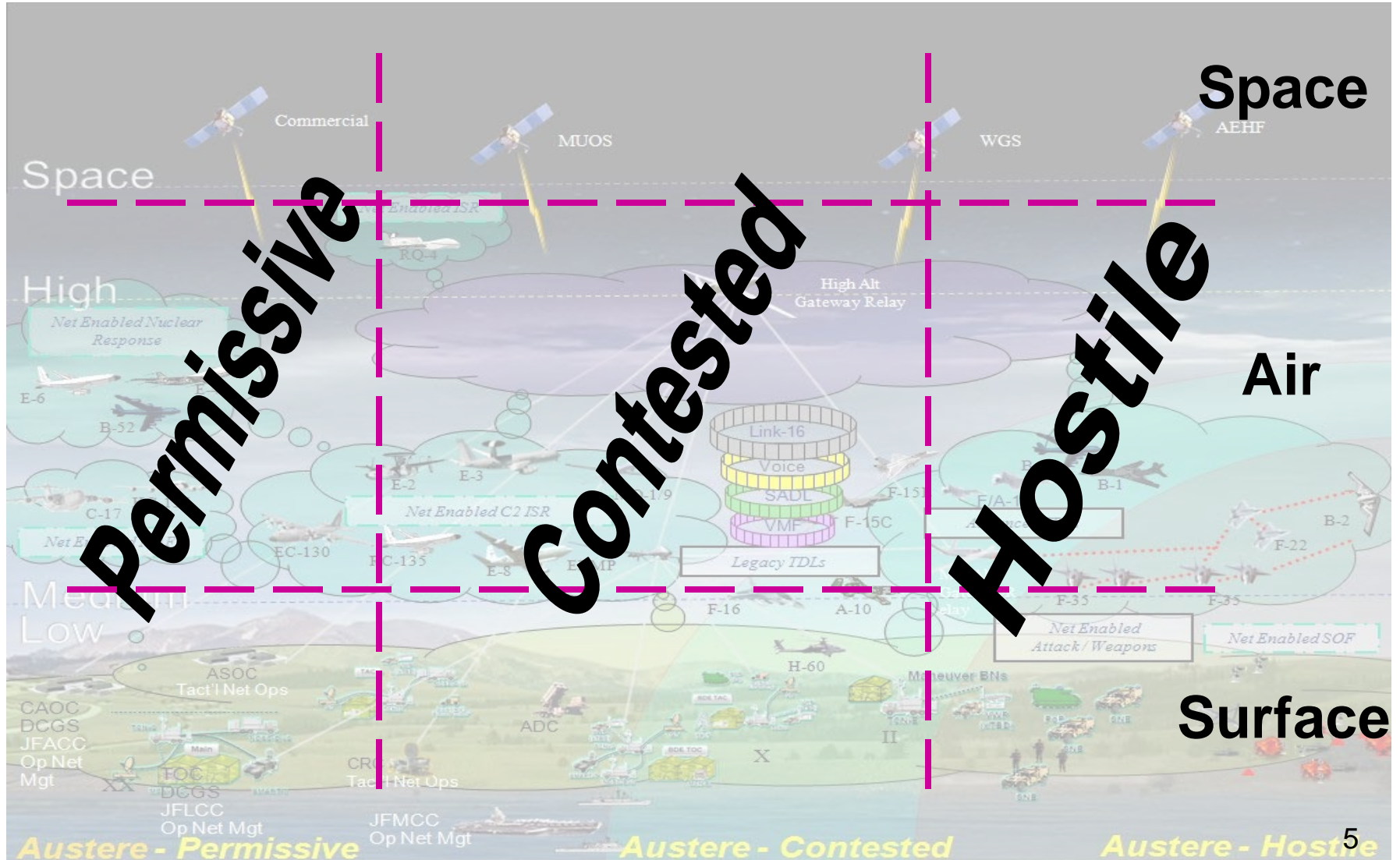
Variable Message Format (VMF) Improved Data Modem (IDM)  
Advanced Tactical Data Link (ATDL)  
Tactical Common Data Link (TCDL) (terminal)  
Networked Common Data Link (N-CDL)  
Standard Common Data Link (STD-CDL)  
Advanced Common Data Link (A-CDL)  
Bandwidth Efficient Common Data Link (BE-CDL)

**Commercial "Tactical Edge"**  
**Cell Phone Towers & Cell Phones**



# Leader Centric C2 ↔ Tactical Edge

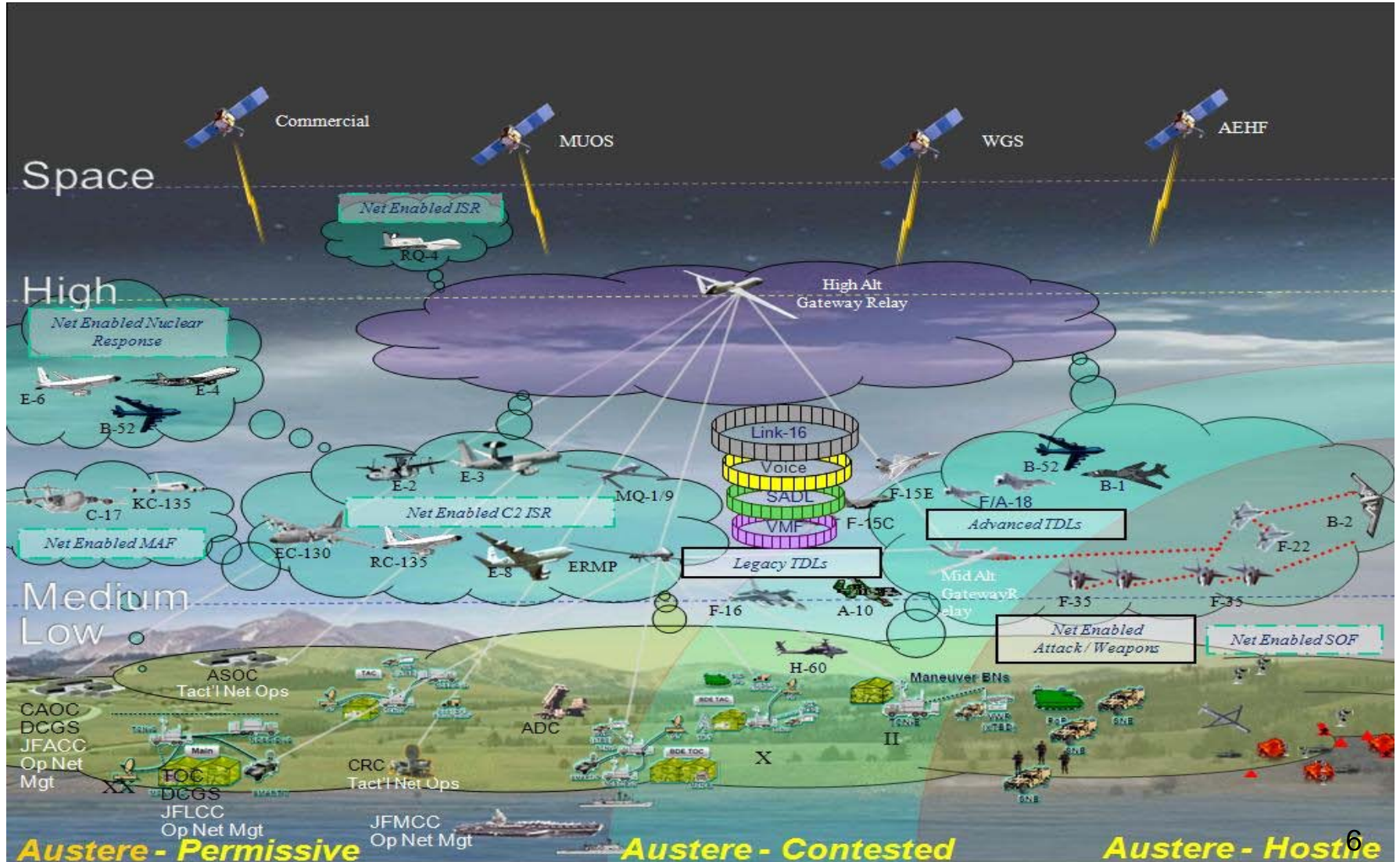
## Very Technical / Very Complex





# Leader Centric C2 ↔ Tactical Edge

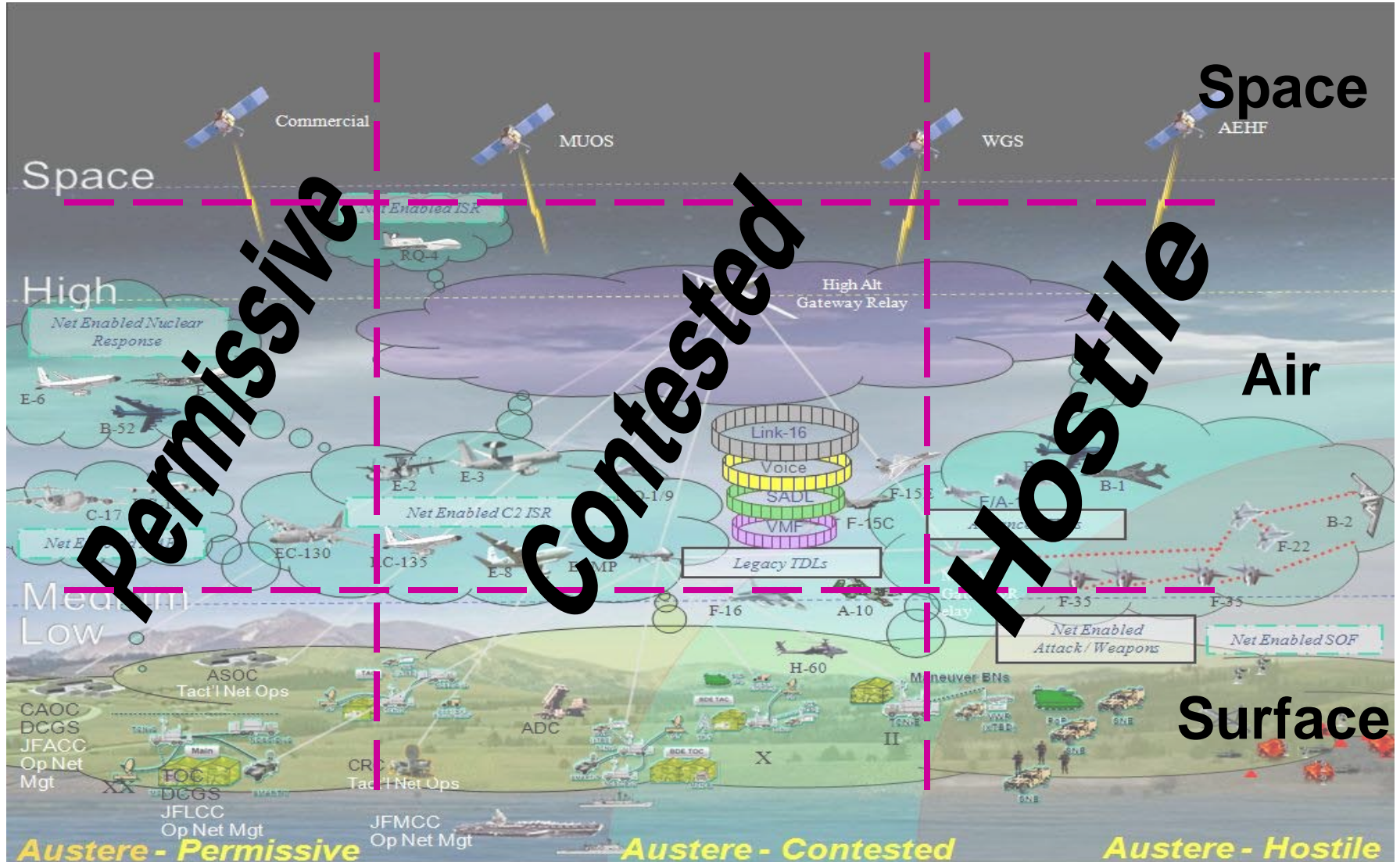
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# Leader Centric C2 ↔ Tactical Edge

## Very Technical / Very Complex





# *Supporting Tactical Edge*



# **Command and Control (C2) Capability Gaps & Challenges**





# *Joint Space Communications Layer (CONOPS)*



**JSCCL Provides persistent survivable assured beyond line of sight communications that facilitate C2 for all users including coalitions/allies across the range of military operations**

- **Operational Challenges / GAPS**

- **Global coverage and capacity when & where needed**
- **Seamless communication**
- **Integration into the Global Information Grid (GIG)**
- **Survivability**

➤ **Interoperability with COCOMS, JTF, & Coalition Partners**



# *Joint Aerial Layer Network (ICD)*



**JALN Integrated with space and surface networks enables Leader Centric C2 and Battlespace Awareness in a net-enabled environment, enabling advanced warfighter information exchange capabilities across the range of military operations**

- **JALN Capability GAPS**
  - **Connectivity**
  - **Capacity**
  - **Aerial Layer Network Management**
  - **Share Information and Data**



# ***Command and Control On The Move (ICD)***



**C2OTM is the capability to maintain situational awareness and make timely and informed decisions while moving anywhere within the operational environment across the range of military operations**

- **C2OTM Capability GAPS**

- **Disconnected, Intermittent, Low Bandwidth Environment (DIL)**
- **Common Interoperability Standards**
- **Maintain & Share Situational Awareness**
- **Accurate C2 to Subordinate Units & Mission Partners**
- **Collaborative Planning**
- **Shared Information with Mission Partners**



# ***C2 Triad Capability GAP Overview***

- **Common Interoperability Standards**
- **Global coverage and capacity when and where needed**
- **Connectivity**
- **Integration into Global Information Grid (GIG)**
- **Survivable**
- **Network Management**
- **Seamless communication ensuring accurate C2 to Subordinate Units and Mission Partners**
- **Shared Information/Data with COCOMS, JTF, and Coalition Partners**
- **Provide Collaborative Planning**

# Warfighter Tactical Edge

- Very Technical, Very Complex
- Jointness is Not Natural
- Information Age Making it...

**More Important and More Difficult**

- Need Processes for Collaboration / Consensus Building
- Need to Work Solutions Through Multiple Lanes With Partners
  - Requirements
  - Acquisition
  - Programs
- Need Technically Competent, Operationally Focused Assessment

★ Collaboration   ★ Consensus Building   ★ Compelling Logic   ★



# Questions and Discussion

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