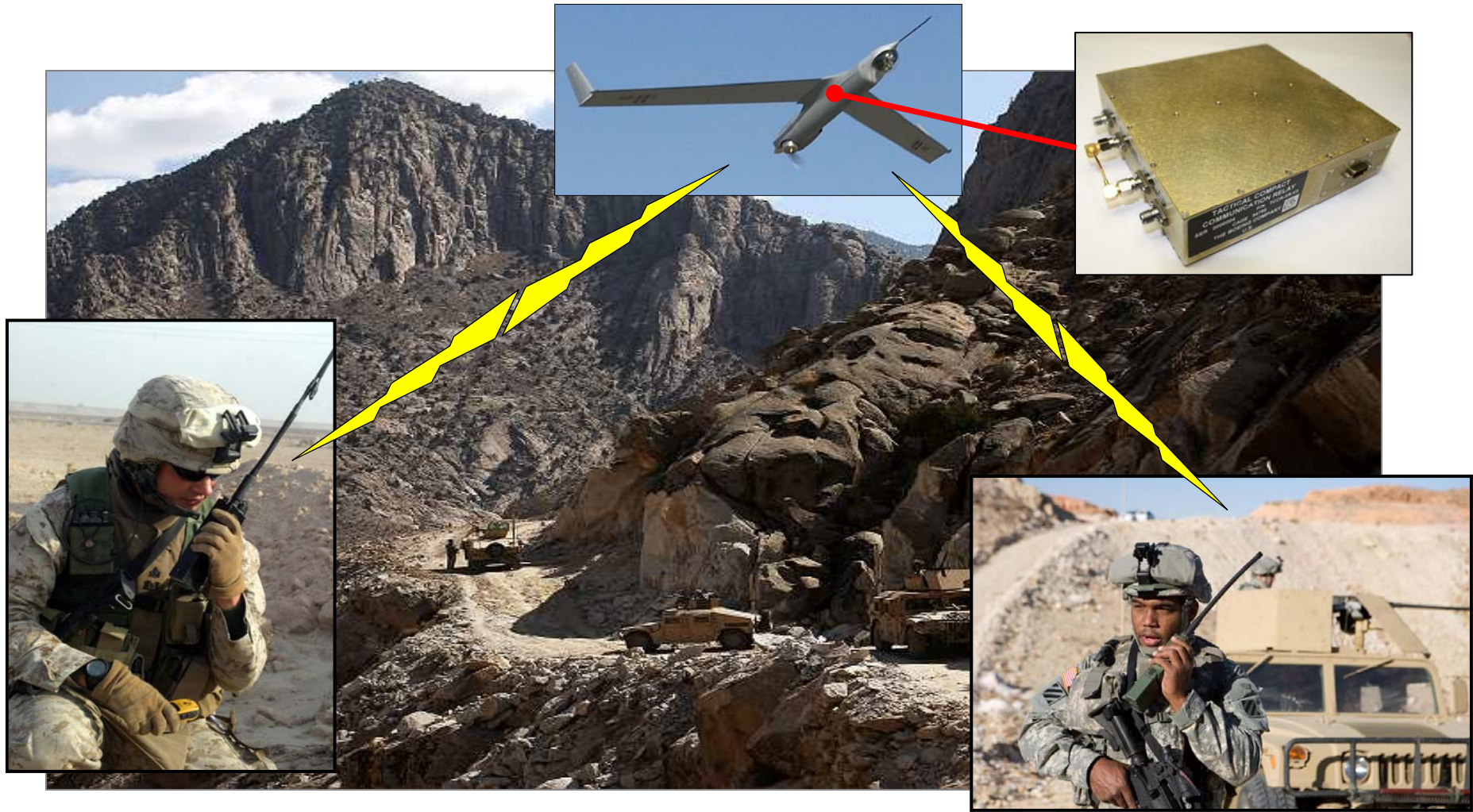


Tactical Compact Communications Relay

Compatible for deployment aboard small UAVs



Disadvantaged Users

- Often Forward Deployed Without Access To National Assets
- Can Be Conventional, Unconventional, or Clandestine
- Severe Size, Weight, Power, Volume Constraints
- Need Sensors, Connectivity, And Access To Larger Systems
- Need Systems Under Their Immediate Control
- Need Systems To Be Able To Operate Independently As Req'd
- Need QRC For Addressing Emerging Threats And Missions



CONNECTION INTO LARGE MIL-COM SYSTEMS REQUIRES LARGE ANTENNAS OR SHORT LINE OF SIGHT

Disadvantaged Users Need Connectivity

- Tactical Communications Relay Addresses These Needs
- Localized Extension Of The Larger Network
- Users Can Not Wait 5 to 10 Yrs for Larger Systems To Shrink

Tactical Compact Communications Relay TCCR-XR-V3 Production Unit

- **Extends range of thousands of military radios**

- Beyond line of sight; > 160 NM
- Data / voice - encrypted / unencrypted
- Space, weight, power compatible with small, tactical UAV's already fwd deployed
- No sensitive encryption electronics
- Technology Readiness Level (TRL) 9
- Platform-agnostic



Relay specifications

- Relay is a “bent pipe”
- Data or Voice
- Encrypted or Non-encrypted
- Weight < 1.08 lbs including cables and antennas
- Power 12.6 watt; permits concurrent use of UAV EO system

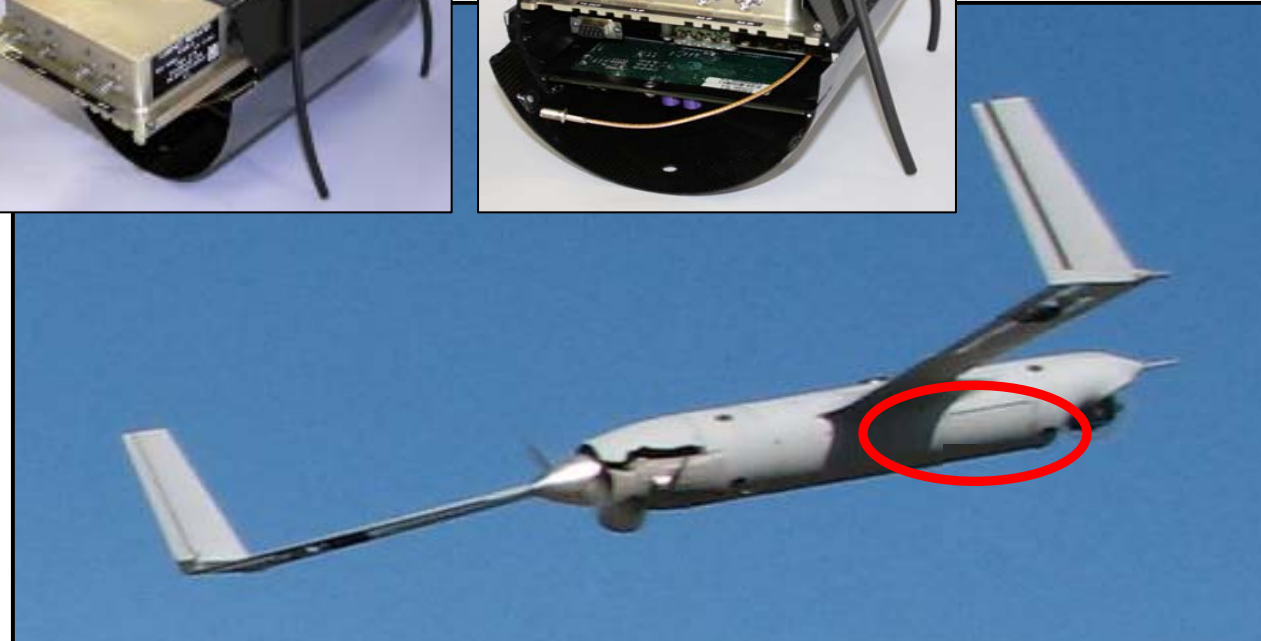
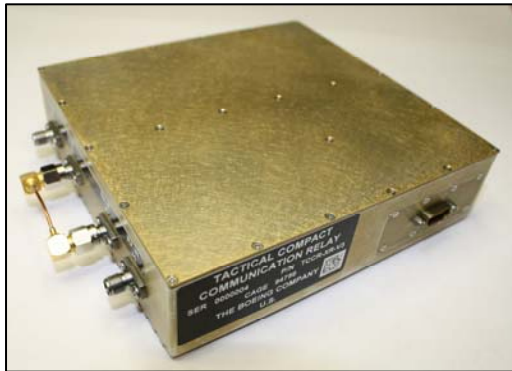
Frequencies

- Receives on UHF
 - Tunable 335.5 MHz to 370.5 MHz
- Transmits on VHF
 - Tunable 225.5 MHz to 262 MHz
- Bandwidth: 25KHz
 - Optional filters are 1MHz and 4MHz
- Frequencies may be changed in flight
- Option for commercial / first responder bands
 - 138 MHz to 174 MHz

Tactical Compact Communications Relay

Ease of integration - ScanEagle

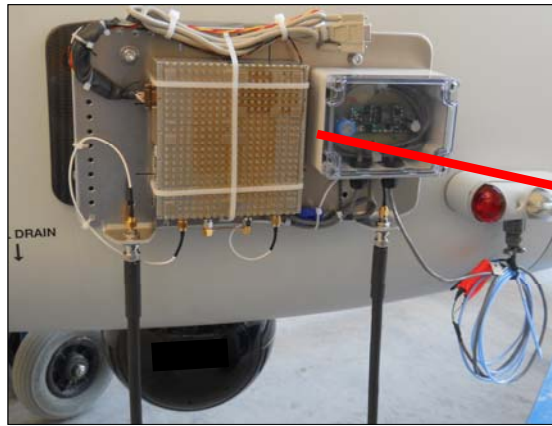
- Slides into avionics payload bay slot
- Permits full ScanEagle flight parameters and EO system functionality



Tactical Compact Communications Relay

Ease of integration – S-100 UAV

- Relay with antennas attached to S-100 pylon
 - Temporary location for test only; normal location is internal



S-100 launch with Relay aboard





Mission - Provide communications among distributed forces in rugged terrain



***Mission - Provide Comms for length of
convoy; from recon lead to trailing units***



Mission - Provide Comms to forces pinned down in deep crevice areas



Mission - Provide commands to ground sensors and data harvesting

Federal Communications Commission

NOTICE OF INQUIRY (NOI) FCC 12-53

This Notice of Inquiry (NOI) examines the role of deployable aerial communications architecture (DACA) in facilitating emergency response by rapidly restoring communications capabilities in the immediate aftermath of a catastrophic event. Following the events of September 11 and Hurricane Katrina, the 9/11 Commission and the Select Bipartisan Committee to Investigate the Preparation for and Response to Hurricane Katrina, respectively, prepared and submitted reports that identified communications failure as a severe impediment to emergency response.

As a result of National Security Presidential Directive 51 (also known as Homeland Security Presidential Directive 20, or NSPD 51/HSPD 20), the Commission has been assigned the “Primary Mission Essential Function” to “ensure continuous operations and reconstitution of critical communications and services.” Our colleagues in other Federal agencies, as well as state, and local governments are also constantly working to improve their emergency communications capabilities, and the communications industry has invested billions of dollars in emergency preparedness and response capabilities. Yet there remains a gap during the first 72 hours after a catastrophic event when communications may be disrupted or completely disabled due to damaged facilities, widespread power outages, and lack of access by restoration crews into the affected area.

In this NOI, we explore the use of DACA to provide emergency communications during those first critical hours after a major disaster. The NOI explores the technologies that are or will be available, including innovative DACA technologies that are still in development. It also examines technical and operational issues associated with the use of DACA technologies, including interference and coordination issues, that must be addressed to enable their use, in order to increase the capabilities of emergency responders and provide the public with connectivity when it is needed the most.