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F-35 MADL Data Integration for the Surface Force

Garza, Victor R.; Wood, Brian; Gallup, Shelley P.; Luqi, Luqi

Monterey, California: Naval Postgraduate School

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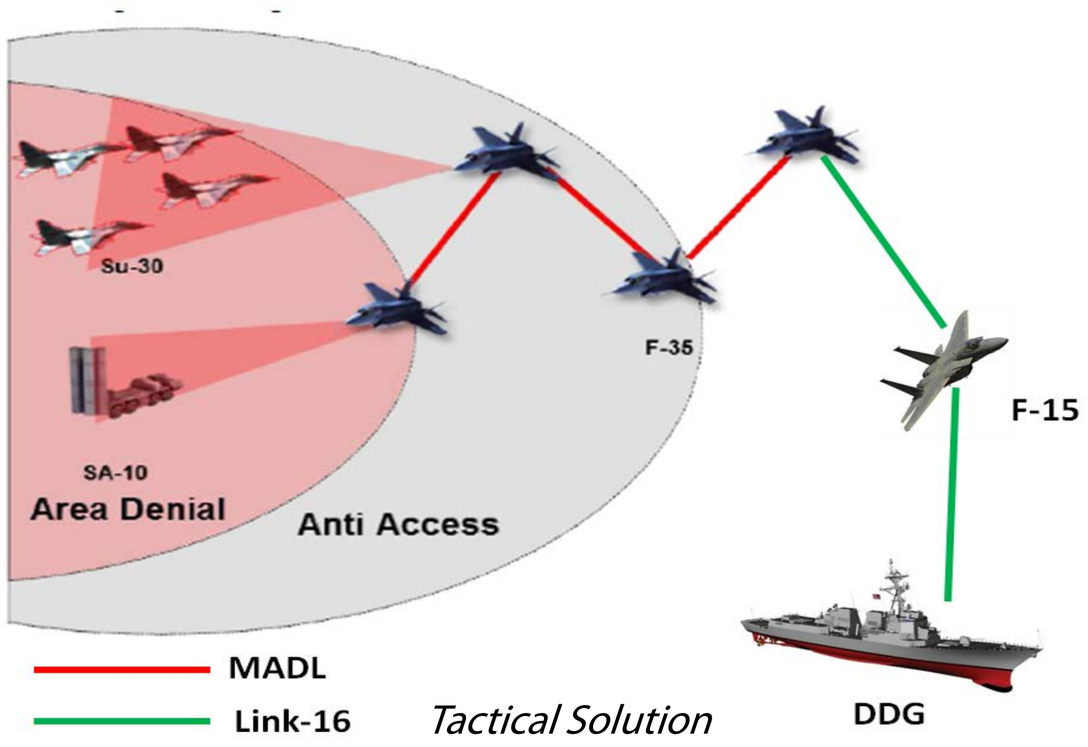
Potential Solutions

Problem

- Inability for F-35s to send MADL data to surface ships without affecting their low probability of detection/intercept (LPD/LPI)..

Tactical Solution

- F-35s operating in defended airspace
- One F-35 outside that area
- Relay MADL data to another aircraft via Link-16
- Relay aircraft (e.g., F-15) transmit MADL data to surface ship (e.g., DDG)



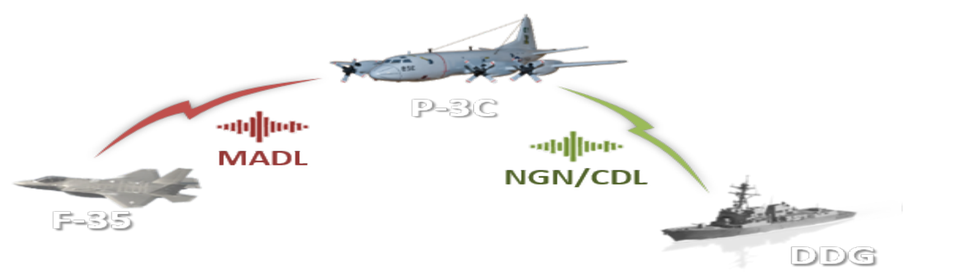
Tactical Solution

Non F-550 technical solutions:

- MADL data transmitted to MADL receiver on ground station (2016-White Sands MR, NM)
- Relaying data via Link-16—reduces LPI/LPD
- F-22 has a similar problem with its IFDL, but it cannot transmit via Link-16. Talon HATE pod developed (Boeing) to allow comms between F-22 and F-15.

Technical Solutions

- Majority of proposed technical solutions involve sending MADL data to a long endurance relay aircraft hosting a Northrop Grumman Freedom 550 (F-550) radio.
- The Freedom 550 will transmit the data (J-messages) on other networks (e.g., Link-16).
- **Proposed Solutions:**
  - Northrup Grumman's Airborne Gateway aboard an RQ-4 Global Hawk
  - Fused Integrated Naval Network (FINN). A JCTD headed by George Mason Univ. FINN Comms Gateway (FCG) carried on pod aboard MALE Group 5 UAV (e.g., MQ-9 Reaper)
  - Rough Babblefish. ONR and NSWC Dahlgren effort. F-550 will be a P-3 (or any long endurance a/c: EP-3, P-8, C-variant, UAV). Translated data sent to ground station via Next Gen Network (NGN)



Rough Babblefish Overview

Thesis Student Work: ***Assessment of Proposed MADL to TADIL-J Integration Solutions***

- Researching proposed solutions (literature review)
- Assisting in performing Cost Benefit Analyses on two proposed solutions.

Conclusions & Recommendations

- Three separate F-550 based solutions are under development and appears to be the right direction for a final solution.
- Tactical solution is possible and may be a better "on the fly" solution.

Further research

- The Total Ownership Cost (TOC) CBA is still in work & will be a part of LT Minnis' thesis.
- Monitoring the progress of the three major technical solutions is critical.

Researchers: Mr. Victor Robert Garza & Mr. Brian Wood, and LT Matt Minnis, USN
Graduate School of Operational and Information Sciences, Information Sciences (IS) Department
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Thesis Title: Assessment of Proposed MADL to TADIL-J Integration Solutions.