

Wireless System for Below Decks Shipboard, Underground, and Urban Warfare

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Army-Contract MOIE

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Problem



Some MITRE sponsored missions place small teams in RF-challenged environments. Team effectiveness and safety are limited by lack of reach-back communications, and RF propagation in bunkers and ships is unsuitable for traditional communications. Of particular interest: US Coast Guard Boarding Teams operating below decks for inspection and investigation.

Background

- Eight-member teams board vessels to conduct operations.
- Team members cannot maintain constant contact with other team members and their own ship.
- Lack of communications impacts operational effectiveness.
- No near-term research activities are currently addressing this problem.

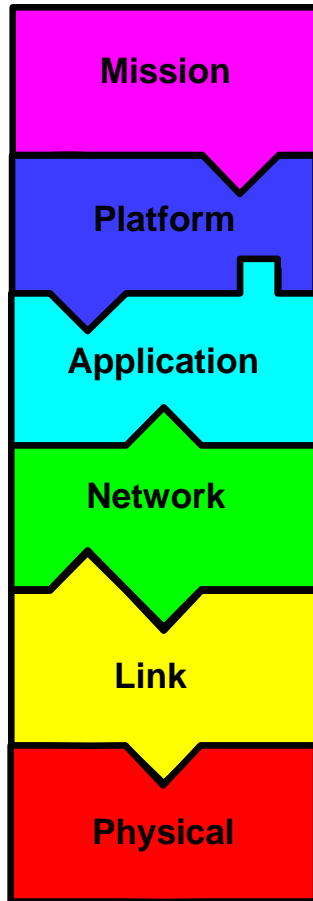


Objective

- **Enable communications between a below-decks boarding team and their own-ship command center with wireless relays**
 - **2-way secure voice (consultation and direction)**
 - **2-way data (photos, sensor, enterprise reach-back)**
 - **1-way low-frame-rate video (team to command)**
 - **Robust and secure, but not LPI or LPJ**

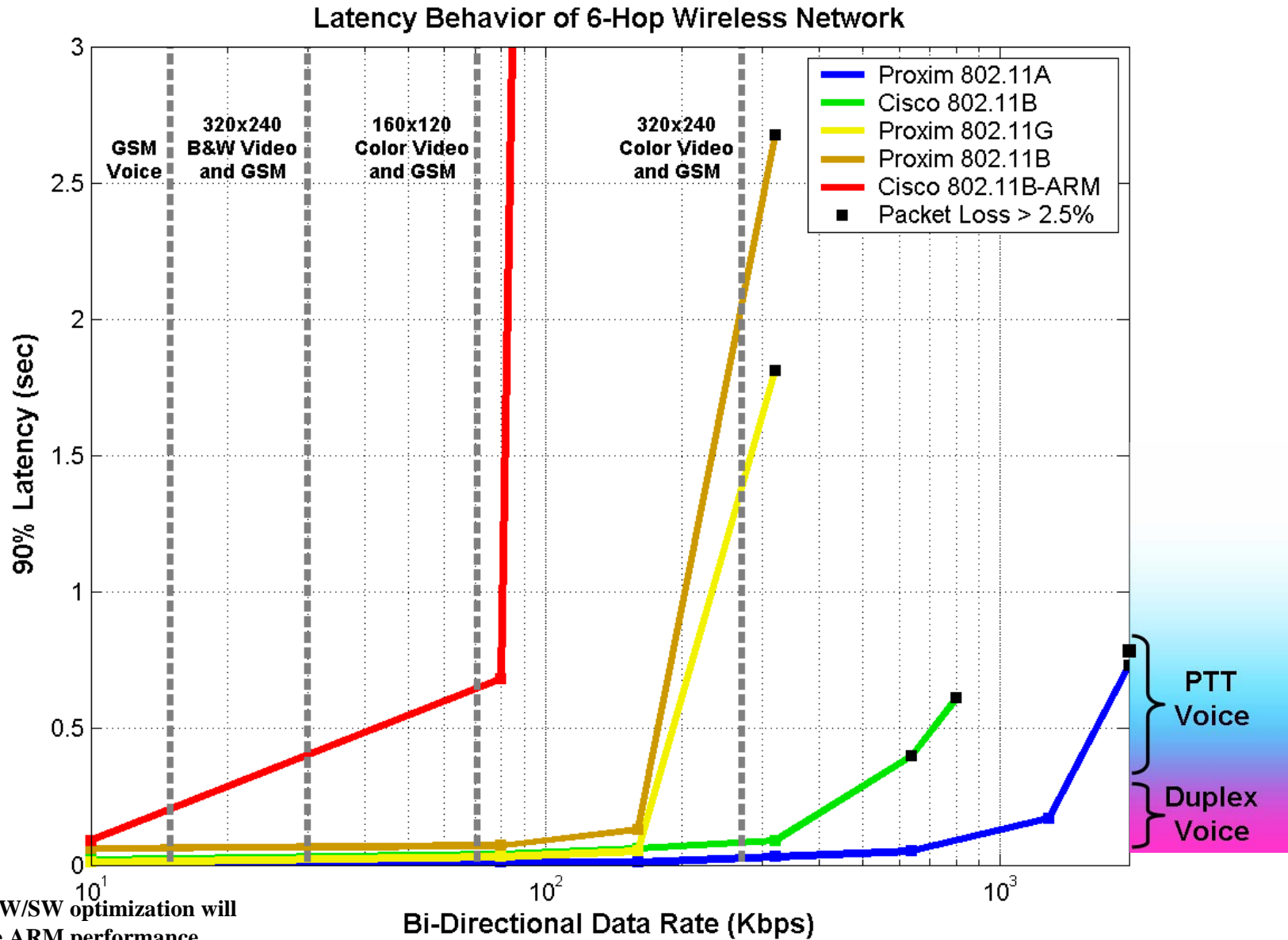


Activities



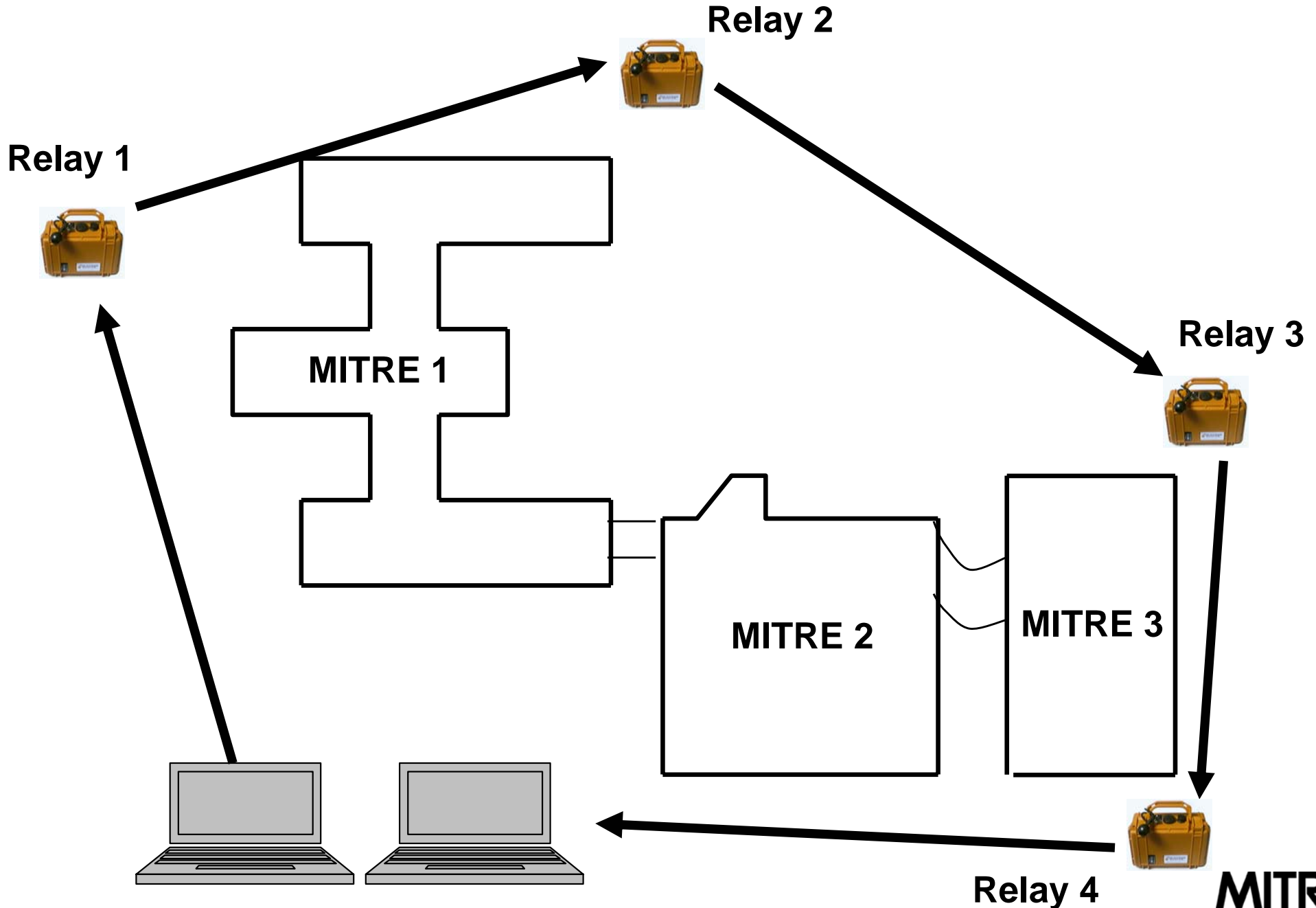
- Operational scenarios and requirements
- Computing platform for team and relay nodes
- Voice/data/video/other communications
- Wireless multihop; ad hoc routing
- Throughput and latency
- RF power, multipath, interference

Highlight



Note: HW/SW optimization will improve ARM performance.

Demonstration



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Impacts

- **Research Collaboration**

- **US Coast Guard Research & Development Center, Groton, CT.**
- **Naval Special Warfare Development Group, Dam Neck, VA.**

Future Plans

- **Embedded Platform Development**
- **Ad Hoc Networking & Configuration**
- **Human Factors Components**
- **Operation Demonstrations**
 - **US Coast Guard**
 - **Special Operations Command**
 - **US Marine Corps**