### WHO

**SYSCOM:** SPAWAR  
**Sponsoring Program:** Multifunctional Information Distribution System (MIDS)  
**Transition Target:** Multifunctional Information Distribution System (MIDS)  
**TPOC:** (619)524-1582  
**Other transition opportunities:** NAVAIR, PMA-298, US Air Force, MDA

![Image of System Integration Diagram](image.png)

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### WHEN

**Contract Number:** N68335-18-C-0224

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<th>Risk Level</th>
<th>Measure of Success</th>
<th>Ending TRL</th>
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### WHAT

**Operational Need and Improvement:** Scalable Network Technologies is working with the Multifunctional Information Distribution System (MIDS) Program office to provide a robust, scalable Link-16 network system-in-the-loop capability as part of the Joint Network Emulator (JNE) library of military waveforms to enable predictable communications in all physical and cyber warfighting domains. This effort addresses an operational need for a scalable application level simulator that can accurately model Link-16 application traffic over existing protocol standards such as the Joint Range Extension Application Protocol Version C (JREAP-C).

**Specifications Required:** This project will result in a Link-16 application layer model that conforms to the JREAP-C standard with respect to the subset of data transfer functionality needed to transmit J-messages over live/virtual/constructive simulation networks. It will also ensure that the Link-16 emulation provided is compatible and interoperable with the Network Enabled Weapon Controller Interface Module (NEWCIM). Additionally, this effort will enhance the JNE external interface module to enable capture and injection of live Link-16 application traffic that conforms to JREAP-C and NEWCIM standards into a constructive Link-16 simulation environment.

**Technology Developed:** Scalable Network Technologies provides network design and analysis tools that enable customers to develop, plan, test and deploy wired, wireless, acoustic and optical networks in a high fidelity, physics-based simulation environment from undersea-to-space. This project will deliver a live/virtual/constructive Link-16 network environment that combines a JREAP-C application layer model, standards-compliant external interfaces to live radio hardware, J-series message generation and consumption capability, and functional interfaces to external simulation systems such as NEWCIM.

**Warfighter Value:** The robust, scalable Link-16 network system-in-the-loop capability delivered by this project will enable predictable communications in all physical and cyber warfighting domains, enhancing future integrated fires and cooperative engagement capabilities for all Link-16 network capable platforms including tactical aircraft, ships and submarines. At the conclusion of this project, warfighters will directly benefit through significantly improved command, control and communications enabled by greatly enhanced Link-16 network training, planning, analysis and operations.

### HOW

**Projected Business Model:** Analysis of Link-16 networks under realistic operational conditions and identifying and resolving potential performance issues which may adversely affect mission assurance will provide significant value to mission and network planners. The Link-16 network system-in-the-loop capability developed by this project will allow current and future customers to plan and deploy reliable Link-16 networks with minimal expenditure in terms of time and resources.

**Company Objectives:** Scalable Network Technologies will use the results of this project to develop a Link-16 Network Planner (LNP) capability that can be used to plan and debug Link-16 network deployments, in the laboratory, prior to deployment. A capability such as the LNP will help to significantly reduce cost of deploying an effective Link-16 network that makes efficient use of available Link-16 resources.

**Potential Commercial Applications:** Scalable Network Technologies has a well-established technology transition path via incorporation of the enhanced capability to simulate/emulate Link-16 networks and applications into the Joint Network Emulator (JNE), which is already being used by a broad swath of DoD customers. Current JNE users include SPAWAR, PEO C3T, CERDEC, AMRDEC, CDD, Ft. Gordon and the Army Operational Test Command. Additionally, many other DoD customers, such as Naval Air System Command (NAVAIR) China Lake, use Scalable’s communications and networking modeling and simulation software. Many of these DoD customers require a high fidelity capability to analyze the end-to-end performance of applications running on Link-16 networks.

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