WHO
SYSCOM: NAVSEA
Sponsoring Program: PMS 420
Transition Target: PEO LCS
TPOC: (850)230-7015
Other transition opportunities:
Commercial Maritime
Coast Guard
Other transition opportunities:
Sponsoring Program:

WHAT
Operational Need and Improvement: The current radio uses Line Of Sight (LOS) communications for Multiple Vehicle Communication System (MVCS). The LCS Capability Development Document (CDD) has a requirement that future spirals of the external communications equipment must operate in a jamming environment. The new radio will provide enhanced robustness in high levels of interference and jamming environments.

Specifications Required: The developed AJ LOS waveform must at least maintain the throughput requirements of the current system while operating in jamming environments with high jammer-to-signal (J/S) power ratios. Each LCS network must support up to three unmanned vehicles, with one potentially acting as a relay to further increase the operating range and provide increased standoff for critical operations. In order to avoid excess integration costs, the prototype SDR must provide a “drop-in” replacement to the current radios. Portability of the waveform is also of interest to allow porting of the waveform to existing or future military SDRs.

Technology Developed: By utilizing advances in robust modulations, error correction, and signal processing, GIRD has developed a novel anti-jam waveform (physical layer (PHY) and networking) meeting the above specifications. The waveform can operate in as little as 10 MHz and is expandable to wider bandwidths to enhance jamming resiliency. Waveform flexibility allows easy parameterization of the waveform for different channel environments and robustness constraints. Software and firmware designed with portability in mind to accelerate the adoption of the waveform to existing or future SDRs.

Warfighter Value: Warfighter capabilities are improved by ensuring high resiliency to contested communication links, thereby allowing access to critical information needed to complete a successful mission.

GIRD Systems is a small business defense contractor that is innovative and agile in satisfying DoD’s signal processing and communication needs.

www.girdsystems.com

WHEN
Contract Number: N00024-16-C-4037
Ending on: December 29, 2017

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Risk Level</th>
<th>Measure of Success</th>
<th>Ending TRL</th>
<th>Date</th>
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<tbody>
<tr>
<td>Single Link (PHY) Lab Demonstration</td>
<td>Low</td>
<td>Throughput at specified J/S &amp; SNR</td>
<td>4</td>
<td>April 2017</td>
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<tr>
<td>Network Compatibility</td>
<td>Low</td>
<td>Message compatibility / UI</td>
<td>4</td>
<td>April 2017</td>
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<tr>
<td>Single Link (PHY) OTA Demonstration</td>
<td>Med</td>
<td>Throughput at specified J/S and distance</td>
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<td>September 2017</td>
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<tr>
<td>Relay Capability</td>
<td>Low</td>
<td>Throughput through relay</td>
<td>5</td>
<td>February 2018</td>
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<tr>
<td>Networked OTA Demonstration</td>
<td>High</td>
<td>Throughput in relevant environment</td>
<td>6</td>
<td>November 2018</td>
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</tbody>
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HOW
Projected Business Model: GIRD intends to license the advanced waveform to DoD primes. The portable, hardware agnostic waveform and software design ensures the waveform is easily able to transition to capable platforms. GIRD will engage industry partners to assess the contribution of the technology to the communication equipment market and identify a strategy for the potential market and potential customers.

Company Objectives: Development of the robust communication system ties in with GIRD’s long-term goal of becoming the preferred provider of advanced waveform and communication capabilities to the DoD and other government and commercial sectors. GIRD’s past and current communication system architectures and designs for Navy SPAWAR, ONR, Army and AFRL, and this program comprise major thrusts in this direction.

Potential Commercial Applications: For commercial applications, GIRD’s novel AJ waveform can be parameterized to meet specifications (bandwidth, throughput, interference resilience, etc.) and integrated into communication systems supporting mission critical applications.

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