



Wideband Intra-Battle Group Communications (WIC)



Nova Engineering, Inc.
5 Circle Freeway Drive
Cincinnati, OH 45246-1201
<http://www.nova-eng.com>

Nova Engineering Inc. is an innovative wireless data communication product company. Nova is a leader in areas such as:

- Mobile ad-hoc wireless networks
- Unattended ground sensors
- Exotic modem and waveform development
- Advanced telemetry
- Communication development tools

Nova has recently formed a separate division, Nova Systems Solutions, to focus on software defined radios (SDR). This division is active in the JTRS program, currently subcontracting to Boeing for the JTRS Cluster 1 Wideband Networking Waveform (WNW).

NEI POC: Steve Olenick
513-478-7845
steveo@nova-eng.com

Navy POC: Dr. Richard North
858-537-8990
rich.north@navy.mil

SBIR Investment: \$849K

Non-SBIR Investment: \$82K

About the Technology

Nova has developed a spectrally efficient, wideband, nonproprietary, open source example waveform that is compliant with software communication architecture (SCA). The waveform is designed to be resistant to channel impairments commonly encountered in the Navy's signaling environment. The work realizes ubiquitous connectivity through integration of the high data rate (HDR) line-of-sight (LOS) waveform into digital modular radio (DMR) or similar SDRs. The HDR LOS waveform concentrates users into terrestrial burst rates to 1.536 Mbps operating on 600 KHz of bandwidth.

Benefits to PEO C4I&Space and other DOD Programs

Before WIC, the total point-to-point intra-battle group terrestrial data capacity was less than a few hundred kbps per ship. This capacity was marginally adequate several years ago, but the increase in traffic load resulted in requirements far exceeding the current capacity. Nova's wireless waveform meets the increased data capacity with the extra benefits of simplified user access and substantially enhanced timeliness/diversity of applications executed on the ship. The U.S Navy needed a means for HDR LOS communications among ships, submarines, and shore sites. Available SCA implementations are proprietary. The development of WIC provides the Navy with a nonproprietary, open source SCA compliant example waveform.

Why WIC Improves the Technology

- Reference implementation significantly reduces development costs because new communication waveforms and services can be added without changing the hardware.
- Adds up to 4.608 mbps of reliable, adaptive multi-user wireless network capability to each ship within a battle group.
- Enables fixes to software bugs in the field by incorporating self-enabling error capability.

Military and Commercial Significance

- WIC provides the SCA compatibility that is mandated for all future military communication systems operating below 55 GHz.
- Nova has funded \$82K for an internal research and development project to develop an "SCA Lite" core framework for commercial application of WIC.

