EXELIS

SpearNet™ Team Member Radio

The smallest combat proven wideband data radio providing advanced wireless, ad hoc networking.

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Today's dismounted Soldier needs compact and secure networked communications not limited by traditional radio frequency line of sight. The Exelis SpearNet is a 21st century communications system bringing voice, situational awareness (SA) and inter-networking access that surpasses traditional point-to-point communication system limitations on range and data rate.

WIRELESS INTEGRATION

SpearNet's mobile ad hoc network provides voice, integrated GPS with SA reporting, and data transfer (100-1500 Kbps) across dismounted networks spanning 6 km. SpearNet maintains voice and data communications within difficult environments such as tunnels, ship cargo holds, fast moving vehicles, and buildings.

SESSION INITIATION PROTOCOL (SIP)/VOICE OVER INTERNET PROTOCOL (VOIP) NETWORKS

SpearNet includes SIP/VoIP for interconnection with telephone networks. SIP provides the ability, when connected with a backhaul such as SATCOM and a SIP server, for the deployed Soldier to speak directly and securely with his in-country commanders. Also available are high speed data transfer (>1 Mbps for video surveillance or mission plans) and selectable GPS position reporting.

IP INFRASTRUCTURE

Simple to use, lightweight and robust, this radio works using an IP infrastructure communication system. SpearNet can be configured as an Internet Protocol version 4 (IPv4) router connecting its RF, Ethernet, and USB interfaces to allow seamless interconnection of IP compliant computers, sensors, cameras, and other tactical networks. Each radio is AES 256-bit encrypted, providing each individual soldier with secure communications from any potential enemy.

MOBILE AD HOC NETWORKING (MANET)

SpearNet is a MANET radio, which maximizes net coverage at all times, especially in urban environments and conditions where normal one-hop/point-to-point radios are unable to maintain coherent network coverage. Being a low latency multi-hop radio means that the range is only required to the next Soldier. Having multiple active SpearNet radios creates a network and consequently the range is extended. The Soldier does not need to manually update the radio; it is self-healing and rapidly updates the network as connectivity changes. This is transparent to the individual Soldier who can concentrate on his primary task without the worry of a 'no-comms' scenario.

VIDEO STREAMING

SpearNet has a proven high speed data capability which can provide real-time video streaming and can even allow for satellite or aerial imagery to be sent to individuals. Connecting a PDA or laptop will allow the Soldier to view updated images supporting what he is actually seeing with his own eyes. This can assist with rapid tactical decision making when timing is critical.

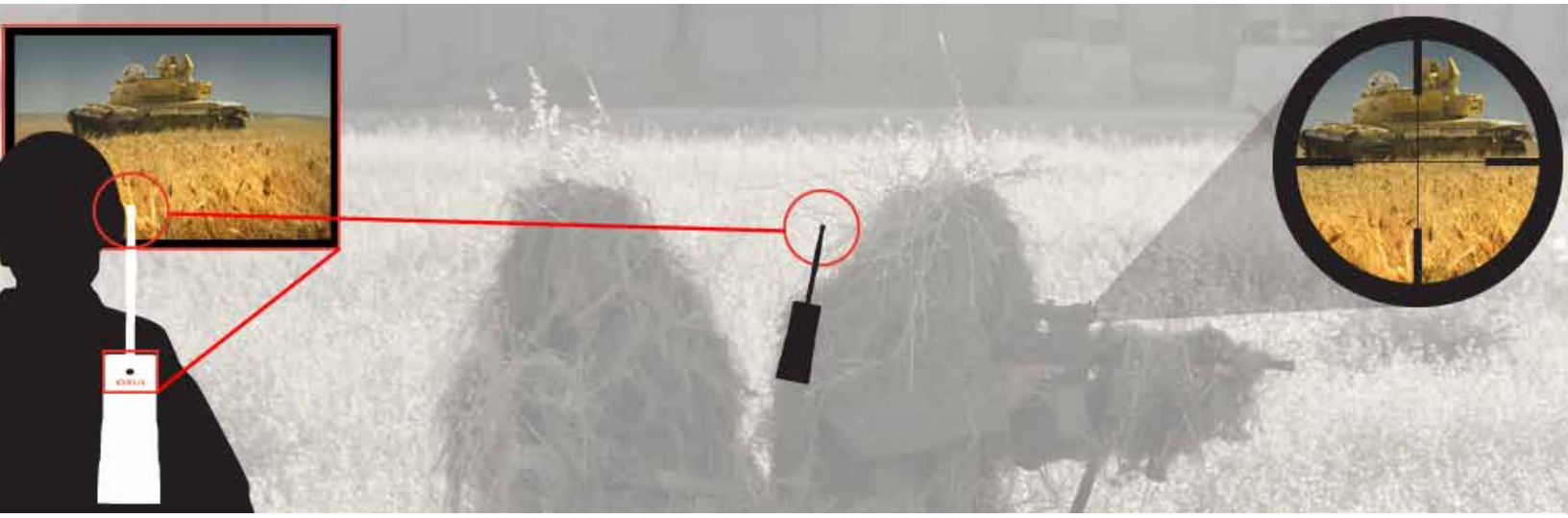
SPEARNET VEHICULAR MOUNT (SNVM)

Mounted forces can also benefit from SpearNet with a 20 watt power amplifier vehicle adapter. This significantly increases the point-to-point and the overall networking range of the radio system. Testing has shown a minimum of 8 km point-to-point range with SNVM. Sustained links of up to 16 km have been demonstrated. A networking range of 40-60 km can be expected with properly placed relays. The SNVM contains two ethernet, one USB, a vehicular intercom, vehicular loudspeaker, and remote control unit interfaces.

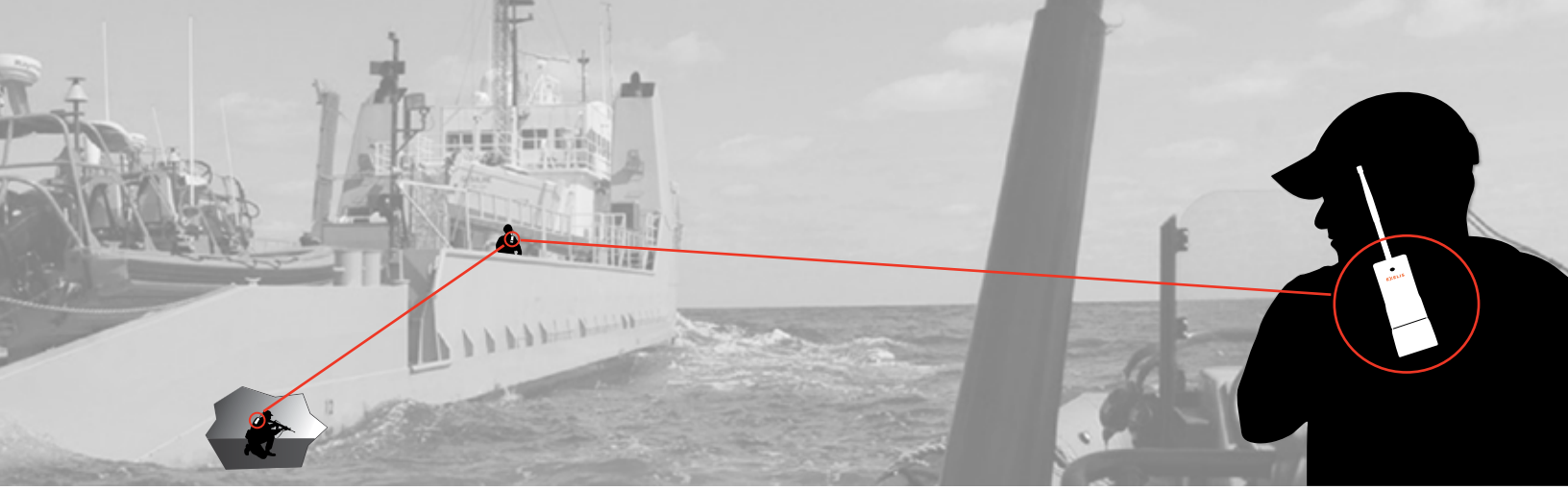
SpearNet delivers flexible communications in a small, lightweight package.

SPECIFICATIONS

System Characteristics	
Transmit Power	Up to 600 mW transmit power
Range	Nominal 2 km range per hop line-of-sight (LOS) Demonstrated at 6 km with 4 hops
Operating bands	1.2 - 1.4 GHz tunable
GPS	Embedded Situational Awareness (SA) with selectable reporting
Standard interfaces	Ethernet, USB, RS-232 passive or active antennas
Presets	8 channel
Networking	Self-organizing, self-healing Multi-hop, inter-networking Tactical LAN on-the-move (no server required)
PTT	Dual; with priority call 16 voice talk groups per radio SIP protocol for worldwide telephone access
Data	Secure voice, data and video Maximum 6 Mbps transmission data burst rate, 2 Mbps sustained IPv4 for inter-networking with SATCOM and long-range radio systems Multi-channel CSMA/CA channel access algorithm
Adaptive Transmission Protocol (ATP)	Continuously adapts data rate to maintain signal quality
Protocol	Superior performance to single channel radios in jamming environments
Security	Customer-specific, proven AES 256-bit encryption
TRANSEC	Customer selectable
Modulation	Direct Sequence Spread Spectrum for optimal urban operation
Environmental	
Operating Temperature	-20°C to +55°C
Testing	Meets MIL-STD-810F: humidity, rain, dust, drop, loose cargo, salt fog, immersion to 1 m, altitude, MIL-STD-461E
Physical Characteristics	
Size	19.61 cm high x 7.59 cm wide x 4.75 cm - 3.05 cm deep (7.72 in high x 2.99 in wide x 1.87 - 1.20 in deep)
Weight	< 700 g (1.5 lbs) including battery
Ancillaries	
Available Ancillaries	Details on SpearNet ancillaries can be found at **www.exelisinc.com/spearnet-tmr**

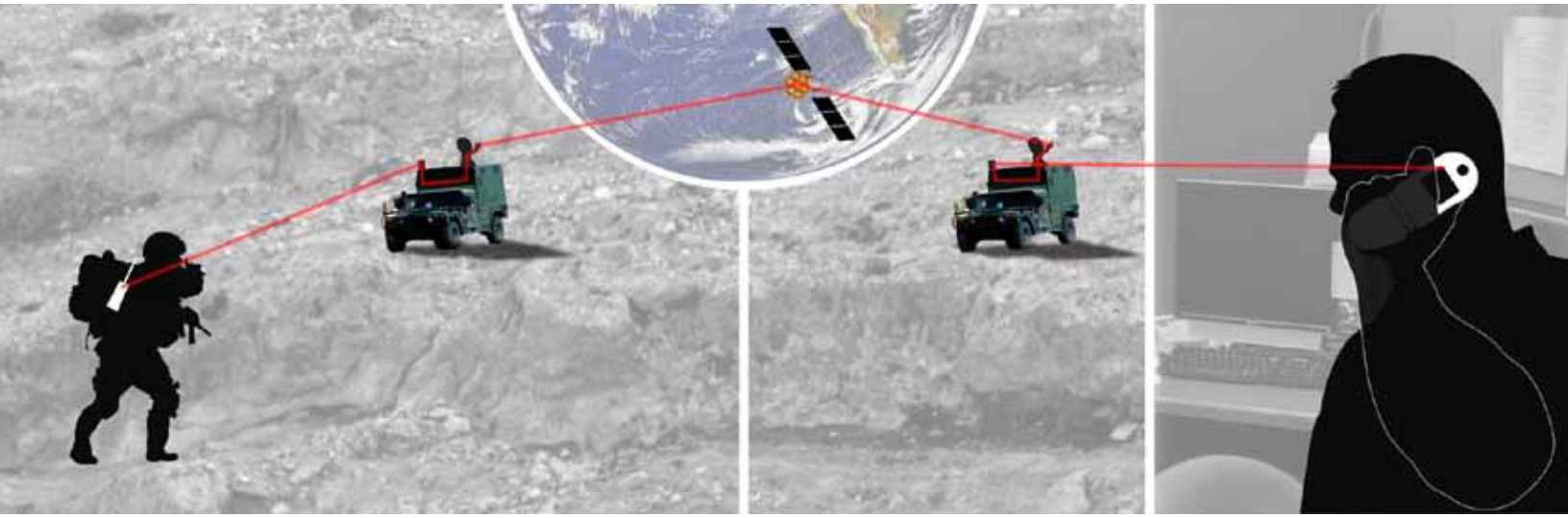


SpearNet transmits real-time video for mission critical operations. This keeps commanders off-site visually aware as events unfold on the battlefield.



Whether inside the hull of a ship, underground in a tunnel, or within a building, SpearNet provides trusted coverage in these difficult locations.

Small and lightweight, SpearNet provides dismounted forces with situational awareness to identify all friendly forces within the area.



Mounted and dismounted operations benefit from SpearNet's ability to interface with SATCOM further extending the range of this system.

VEHICULAR SYSTEM SPECIFICATIONS

SpearNet Vehicular Mount (SNVM) Features

- 20 W power amplifier for 8 km range line-of-sight
- Meets MIL-STD-810F environmental
- Network Interfaces (2 ethernet, 1 USB)
- Vehicular Intercom (VIC) Interface
- Vehicular Remote Control Interface for trunk mounting
- Vehicular power 24 - 36 volts
- Supports all mobile ad hoc networking features of SpearNet radio
- Ideal for a mobile data backbone

SpearNet Vehicular Remote Control Unit (SVCU)

- Full Control of SNVM and mounted radio
- Remotes up to 10 meters
- Size: 15.2 cm x 15.2 cm x 5.0 cm for front dash mounting
- Supports headsets or H-250 handset
- Supports LS-671 speaker
- Digital interface for noise immunity

SpearNet Vehicular Antenna (C207)

- Antenna gain 3 dBi
- Standard NATO mount with spring base
- Omnidirectional
- Length 40 cm

Vehicular System Test Results

- Demonstrated up to 14 km LOS link at ground level
- Demonstrated 60 km LOS link unobstructed LOS
- 1 km downtown urban canyon range (obstructed)
- Mobile ad hoc networking at 4 hops
- Vehicular mobile operation (80 km/hr tested)

VEHICULAR CONFIGURATIONS

The SpearNet vehicular system comes in three standard configurations as shown below.

Basic Session Initiation Protocol (SIP) Voice and Data

System includes: SpearNet radio, SNVM, vehicle antenna

> Vehicular mount
> Long range relay (> 8 km LOS)
> Mobile ad hoc
> SIP voice via network connection to customer's SIP server
> 2 Ethernet for separate router and computer host interfaces

Multiple Net Combat Net Radio (CNR), SIP, and Data with VIC

System includes: SpearNet Radio, SNVM, vehicle antenna, user's VIC

> Basic SIP voice and data capabilities included
> VIC can participate in CNR network

Full System: SIP calls, Multiple Net CNR Voice, Mobile Ad Hoc Network (MANET) Data Relay, and Remote Control

System includes: SpearNet Radio, SNVM, SVCU, LS-671, H-250 handset, vehicle antenna

> Basic SIP voice and data capabilities included
> Loudspeaker/H-250 or Soldier headset for CNR voice
> Ability to remote the vehicular mount into unused space (up to 10 meters)
> All 3 CNR voice networks

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