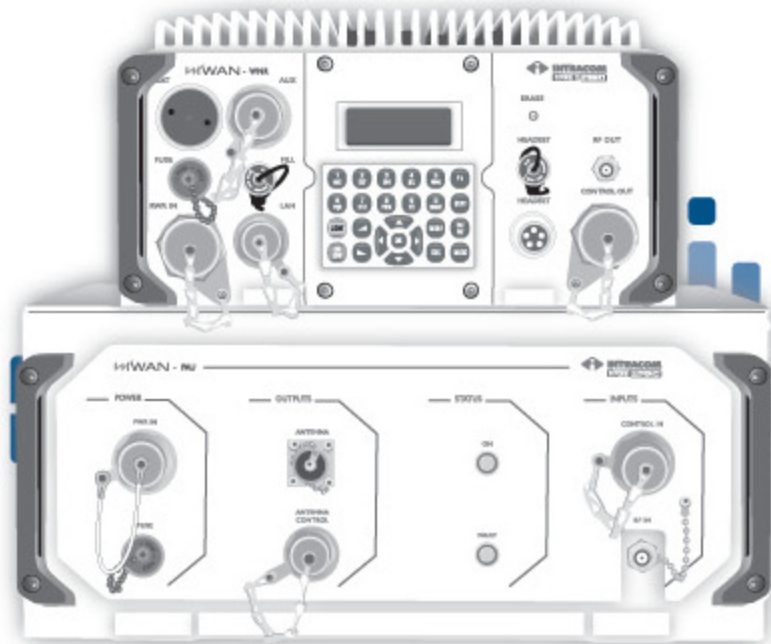




INTRACOM
DEFENSE ELECTRONICS



HIWAN

WIRELESS WIDE AREA NETWORK

Wireless Wide Area Network

WiWAN is an advanced, IP-based tactical communications network for secure, multimedia information transfer, interconnecting deployed forces at all levels of command in the contemporary theater of operations.

Architecture

WIWAN supports both Point-to-Point (PtP) and Point-to-Multi-Point (PtMP) network topologies under Line-of-Sight (LOS) and non-Line-of-Sight (NLOS) propagation conditions.

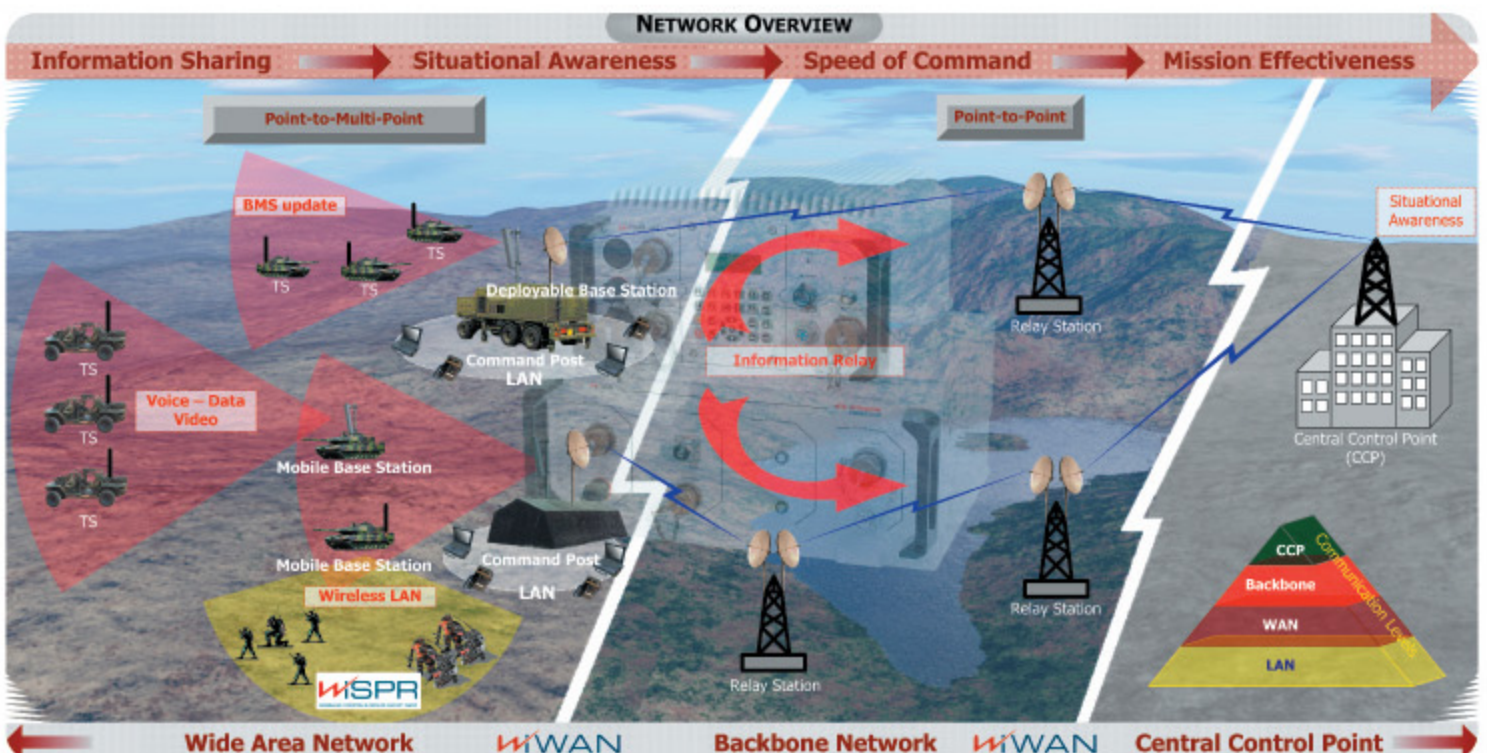
Network on the move

WIWAN's mobile stations create a dynamically adjustable network topology, providing flexibility and scalability that enables forces to easily adapt in a constantly changing operational environment. This feature is a most differentiating element between WiWAN and other communication systems.

Features

WIWAN's adaptive modulation scheme provides for connection quality and link stability, while maintaining the highest achievable capacity for a given link quality. With Bit Rates in the area of Megabits per second mission critical information flow is enhanced; thus resulting in a high level of real time situational awareness in C4I systems.

WiWAN communication stations implement a wireless Wide Area Network (WAN) that improves information sharing by connecting both Wireless and Wired Local Area Networks and their users together. The long range connectivity between dispersed LANs enhances situational awareness, improves the speed of command and leads in dramatically increased mission effectiveness.



Architecture

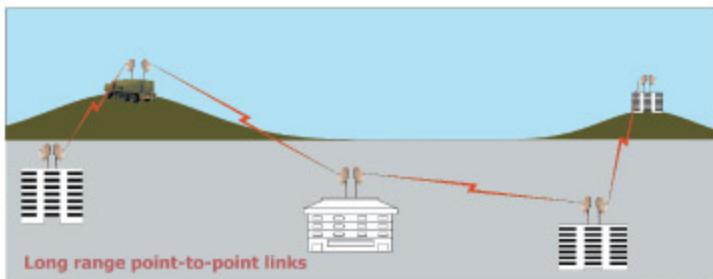
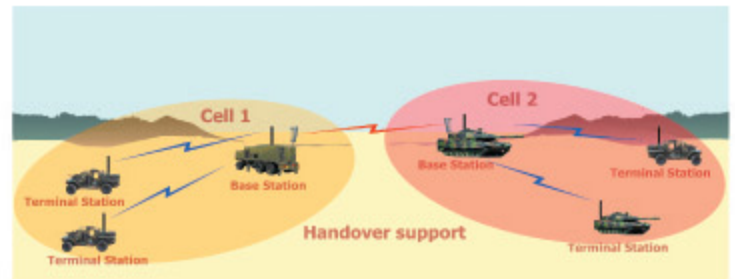
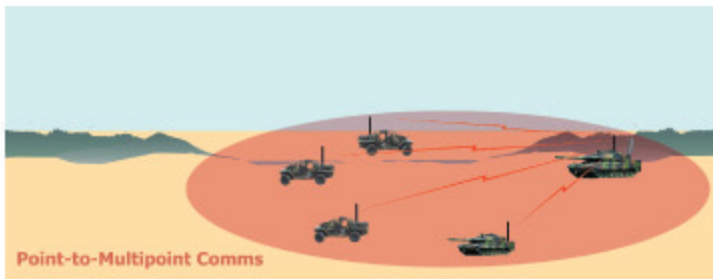
WiWAN consists of fixed, deployable and mobile base and terminal stations and provides the entire chain of command with secure access to mission-critical information from any point on the network. Determined by the missions, force structures and concepts of operations involved, WiWAN offers different networking capabilities in order to improve information sharing and enhance the quality of information shared. WiWAN supports both Point-to-Point and Point-to-Multipoint network topologies offering an unprecedented degree of flexibility, agility and adaptability in the force structures involved.

Point-to-Multipoint

Point-to-Multipoint (PtMP) mode of operation is selected, whenever a communications network on the move needs to be established. In this mode, a number of stations are selected to operate as Base Stations (BS), serving all other participating nodes, which operate as Terminal Stations (TS). Both Base and Terminal Stations are identical and interchangeable and can operate in distinctive modes. WiWAN supports handover between different Base Stations, for all the Terminal Stations on the move, in order to preserve seamless connectivity.

Point-to-Point

Point-to-Point (PtP) mode of operation is selected, whenever a communication link needs to be established between two remote points. The remote points can either be fixed locations, whenever support of information routing to higher echelons is required, or mobile units of a communication network on the move, whenever a wireless backbone is required. For prolonged distances (over 100 Km), WiWAN Relay Stations are utilized.



IP Networking

WiWAN is a wireless **IP network** featuring end-to-end data transport, Quality of Service (QoS), session management, security and mobility. Reliance on IP allows WiWAN to facilitate convergence with existing networks (*interoperability*) and be upgraded easily in order to meet all the latest advances in the area of application development (*upgradeability*). WiWAN incorporates adaptive QoS mechanism to satisfy a large number of requirements of different applications. QoS incorporates attributes that address application requirements through a multi level Priority Plan Communication Matrix. Throughput, delay, integrity, priority, availability and a number of other parameters can be configured per application.





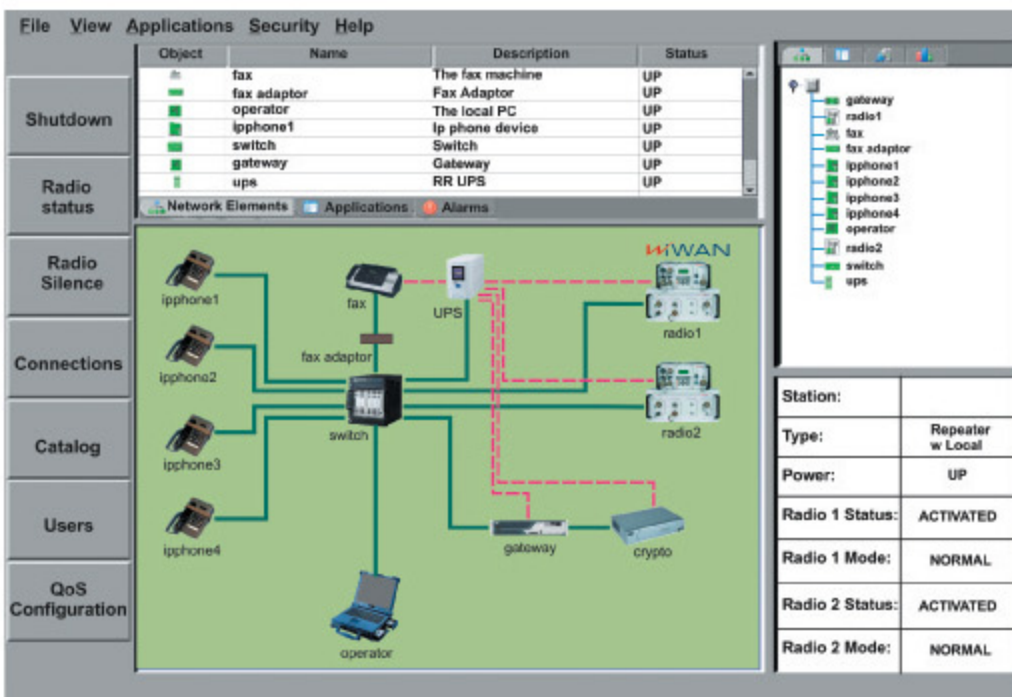
Services

Voice

- Multiple simultaneous VoIP channels
- Conference channels
- Group channels
- Point-to-point calls
- Multi level priority calls
- Broadcast
- Multicast
- Reception channels under radio silence
- Legacy Radio (HF/VHF/UHF) voice channels integration through WiWAN

Data

- Real time video exchange
 - Video Teleconference
 - Dismounted soldier video relay
- E-mail
- FTP
- Remote Control
- IP-based applications
- SMS exchange
- SMS reception under radio silence
- Sensor Data Transfer



The screenshot shows the NMS interface with a menu bar (File, View, Applications, Security, Help) and a sidebar with tabs for Shutdown, Radio status, Radio Silence, Connections, Catalog, Users, and QoS Configuration. The main area displays a network diagram with various devices connected. A table on the right lists network elements:

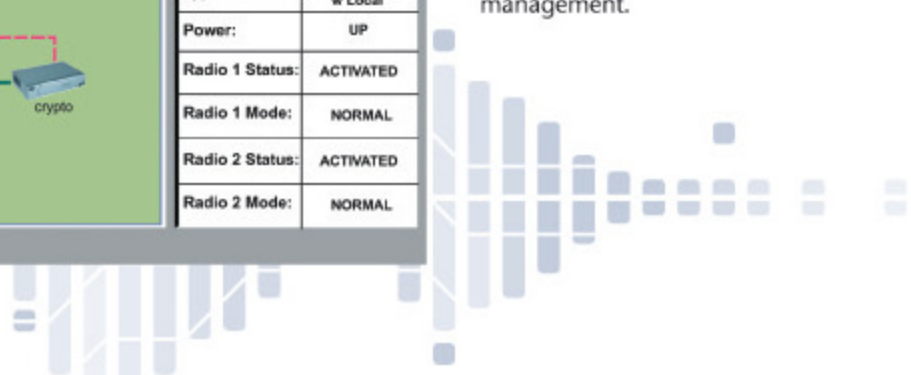
Object	Name	Description	Status
fax	The fax machine	UP	
fax adaptor	Fax Adaptor	UP	
operator	The local PC	UP	
ipphone1	Ip phone device	UP	
switch	Switch	UP	
gateway	Gateway	UP	
ups	RR UPS	UP	

Below the table, there are tabs for Network Elements, Applications, and Alarms. The network diagram shows a central switch connected to various devices including ipphone1-4, fax, fax adaptor, operator, gateway, crypto, radio1, radio2, and ups. A status table on the right provides details for the radio stations:

Station:	
Type:	Repeater w Local
Power:	UP
Radio 1 Status:	ACTIVATED
Radio 1 Mode:	NORMAL
Radio 2 Status:	ACTIVATED
Radio 2 Mode:	NORMAL

Network Management System

WiWAN's Network Management System (NMS) is an SNMP-based powerful software tool for controlling, planning, and monitoring the resources of the network. Through NMS the user is able to perform several tasks such as initial network planning, frequency allocation, cryptographic key distribution authorization and configuration, fault, security, performance and bandwidth management.



Radio System



Wireless Network Router Unit (WNRU)

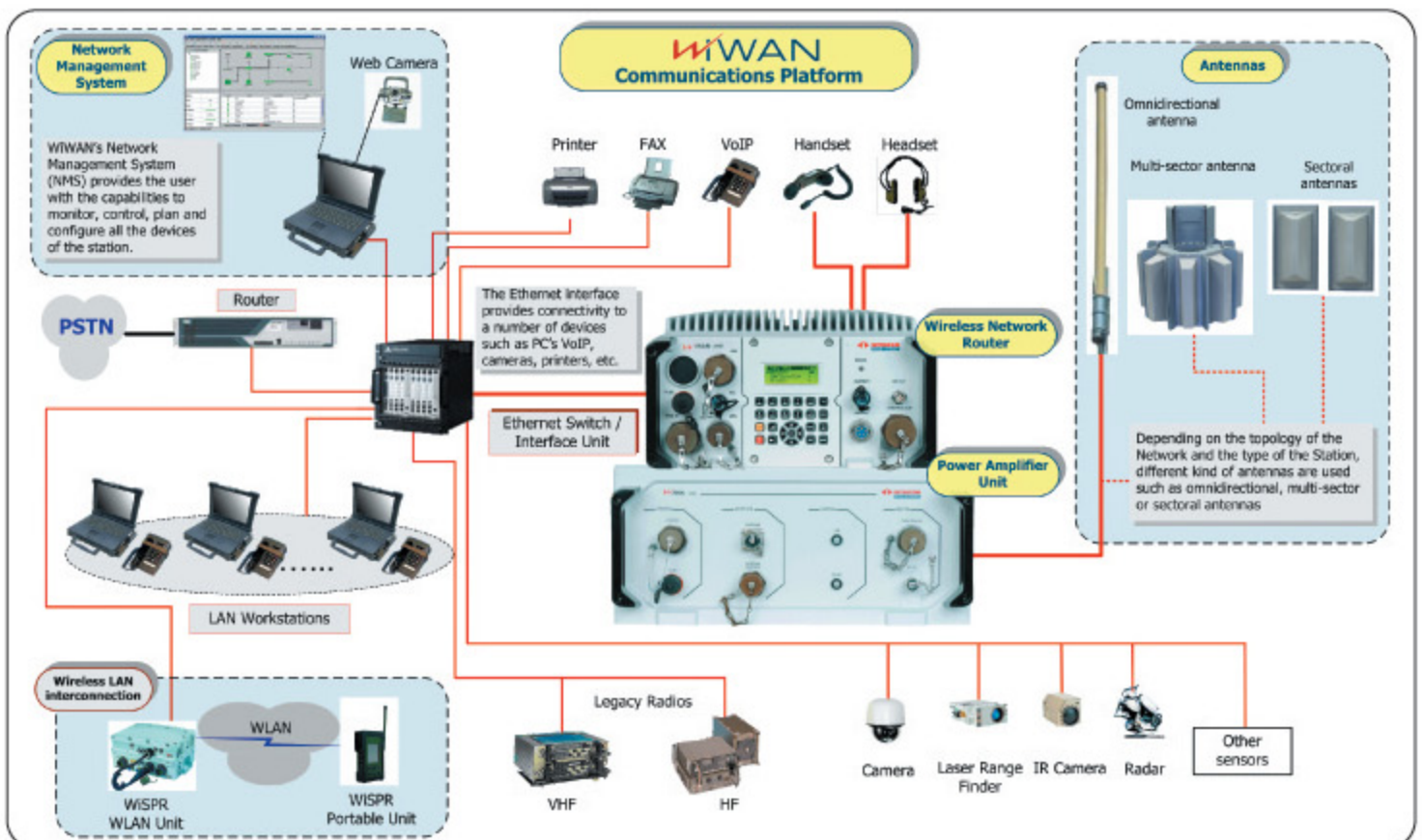
WNRU provides the majority of connection interfaces to external systems, hosts system MMI and routes data traffic to the wireless network. Routing is performed through a sophisticated routing algorithm to support mobility.

Power Amplifier Unit (PAU)

The **Power Amplifier Unit** hosts the RF electronics, the antenna control subsystem and the advanced ECM circuitry and logic.

Connectivity

Standardized interfaces such as Ethernet 10/100, Serial RS-232, USB and audio input/outputs offer system level interoperability with a wide variety of external equipment such as PCs, printers, FAX machines, VoIP devices, handsets, headsets and routers.



ECCM

TranSec

Transmission Security (TranSec) is achieved through the implementation of a Frequency Hopping Spread Spectrum technique. WiWAN is using an advanced, secure, algorithm with rapid, automatic synchronization of users in order to perform agility of the Communication Frequency. The broad system bandwidth and the system's fast hopping rate yield a high level of TRANSEC, enhanced Low Probability of Intercept (LPI) and Low Probability of Detection (LPD).

ComSec

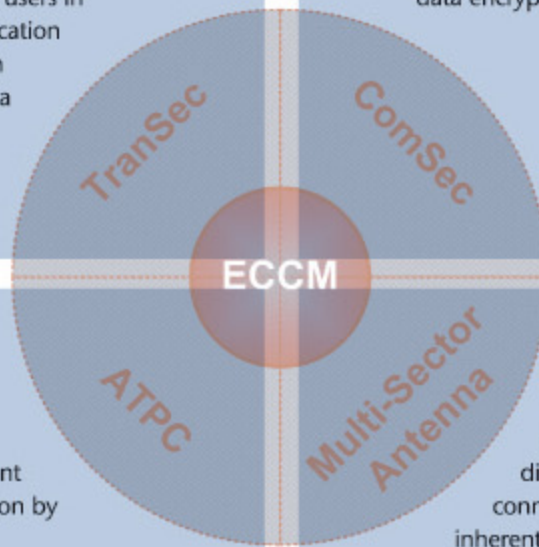
Communication security is achieved with the encryption of network traffic providing strong support for confidentiality of data traffic. WiWAN encryption utilizes the AES algorithm for data encryption with a key length of 256 bits.

ATPC

Automatic Transmit Power Control (ATPC) ensures that the transmitter power is tailored to the link requirements, thereby limiting the amount of power available for possible interception by hostile systems.

Multi-Sector Antenna

Specially designed for mobile stations, the **multi-sector antenna** directs the transmitted power to the desired direction providing long-range connectivity, improved throughput and an inherent LPI/LPD capability.

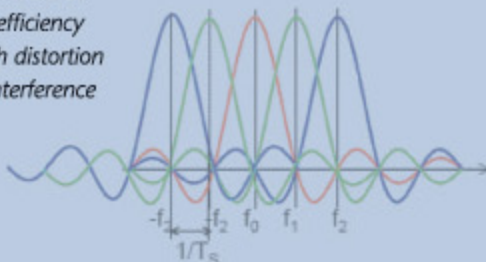


Features

OFDM

WiWAN utilizes **OFDM technology**, a robust technique offering the benefits of

- high spectral efficiency
- low multi-path distortion
- resiliency to interference



Adaptive Modulation

Modulation modes are adaptively selected, optimizing the use of bandwidth as propagation conditions vary. The supported modulation modes are BPSK-1/2, QPSK-1/2, QPSK-3/4, 16QAM-1/2 and 16QAM-3/4 giving burst bit rates of 1.33, 2.66, 4, 5.33 and 8 Mbps respectively.

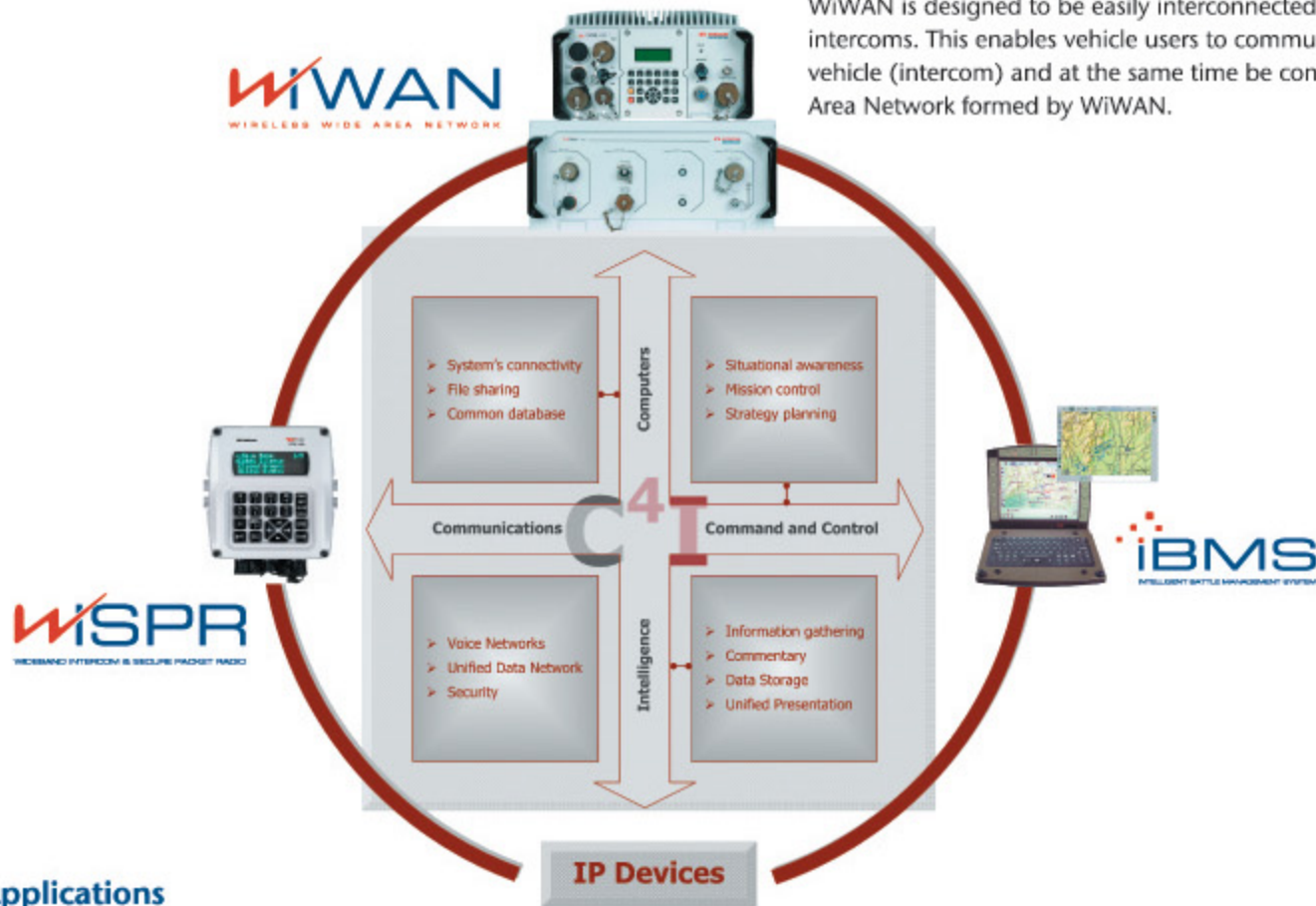


C4I platform

WiWAN forms a modular, reliable and robust multimedia communications platform offering both the hardware and the software means for the formation of a modern C4I system. High data rate transfer, IP connectivity and high system level interoperability are advanced features offering C4I capabilities which transform WiWAN equipped forces into an agile, effective, efficient, and robust network-centric system.

Increased connectivity owing to the IP-based architecture provides the users a multiplicity of services such as Email, Internet access, file sharing, database access, data storage, VoIP, VTC, etc., while easy integration of Battle Management Systems enables WiWAN stations to handle, process and relay information flows (maps, images, reports) back to higher echelons increasing situational awareness and speed of command.

WiWAN is designed to be easily interconnected with vehicular intercoms. This enables vehicle users to communicate within the vehicle (intercom) and at the same time be connected to the Wide Area Network formed by WiWAN.



Applications

- Tactical Communications Network
- Backbone Network
- Land and Sea Border Surveillance
- Mechanized Brigade Wideband Mobile Communications

- Airports Security
- Special Operations
- Disaster relief

Technical Specifications

Frequency Range

225 - 400 MHz
1.350 - 1.525 GHz

Network Topology

Point-to-Point & Point-to-Multi-Point

Modes of Operation

Fixed Frequency
Frequency Hopping
Receive only

Bit rate

Up to 12 Mbps
(modulation dependent)

Waveform and Modulation

OFDM
Adaptive modulation - BPSK / QPSK / QAM -
channel quality dependent

Security

TRANSEC:	Frequency Hopping
COMSEC:	On board encryption
Optional:	Customer specific

Antennas

Omni-directional, Sectoral, Multi-Sector
Directional - Relay

Output Power

Automatic Transmit Power Control (ATPC)

Power Supply

DC Voltage:	18-36 VDC
AC Voltage*:	110-220 V 50/60 Hz

Supported Interfaces

Ethernet (IEEE 802.3), RS-232, USB, Audio
Interface Unit
Custom interfaces upon request

Environmental

IAW MIL-STD 810E

EMI / EMC

IAW MIL-STD 461E

Dimensions

H/W/D

WNRU	162 x 300 x 346
PAU	180 x 402 x 341

*External power supply.
Specifications subject to change without prior notice.

