



# WISPR<sup>revo</sup>

Communication & Information System

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# WISPR<sup>evo</sup> International Recognition

PzH2000 SPH



Leopard 2HEL MBT



Leopard 2A6 MBT



AVLB / Leguan



Leo2 Revolution MBT



Wiesel 2D



ASRAD SORAD



Keiler MSV



MARS II MLRS



ARTHUR WLS



MARDER IFV



BPz 2 ERV



M113 APC



M577 CPV



M109 SPH



BOXER IFV



WAHASH



WASD WH



FFG WiSENT



Leopard 2A7+



FFG G5 IFV



ASCOD APC



ASCOD IFV



JACKAL 2A



CHALLENGER 2 MBT



WARRIOR IFV



KOMONDOR



PATRIA 6x6 WPC



Leopard 2A4 MBT



JLTV 4x4



GERLACH 4x4



DINGO CP



TR85-M1 MBT



AAV-7 APC



RCH-155



IRIS-T ADS



UK SBS



HN Prometheus



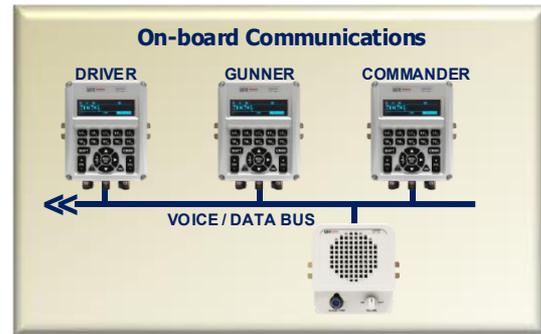
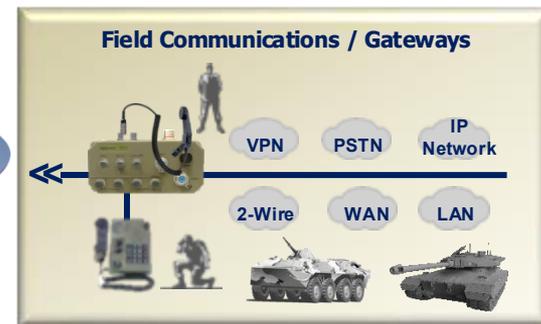
HN Mark V

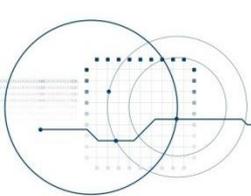


SKYRANGER ADS

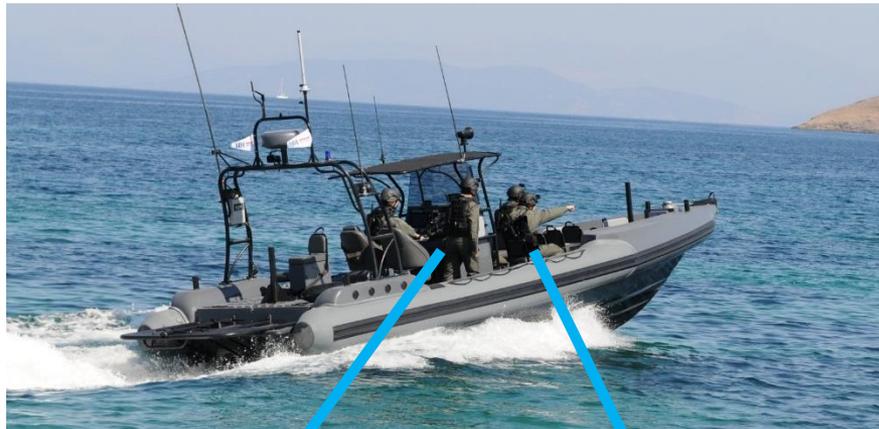


# WISPR<sub>evo</sub> System Architecture





## Naval Applications



## Ground Mobile Applications



# WISPR<sup>evo</sup> Commander-Crew User Terminal (CCU)



## Native Ethernet/IP Device

- Multi-lingual OLED display
- Alphanumeric Keyboard
- Direct Interfaces for 2 headsets
- Direct interfaces for 2 Tactical Radios
- Loudspeaker socket
- Vehicle & BMS alarm interfaces
- Ethernet interfaces with PoE
- Serial RS232 interfaces
- Embedded SIP client
- User Access Control
- Covert operations support mode
- Static / Dynamic IP Address



## WISPR AQ-DNR<sup>2</sup>

Noise (Vehicle, Ambient, Environmental)



Speech

Microphone

Incoming noise is suppressed



Crewmember Terminal

Additive noise

Noise Free Speech

Headset



Crewmember Terminal

Additive noise

Noise Free Speech

Headset



Crewmember Terminal



Speech



Radio

Noise Free Speech



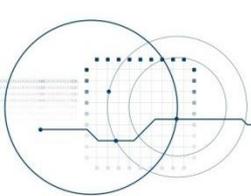
Speech

### Unrivalled World Leading Performance

- Ni-VOX response time: 7 ms
- Vehicular noise reduction : -39dB at 116 dB(A)
- Tested and measured by the German BAANBw
- Tested and evaluated by the British ATDU

### Comprehensive Anti-Noise Technology

- **AQ-DNR<sup>2</sup>** 2<sup>ND</sup> Gen. **A**dvanced **Q**uality **D**ynamic **N**oise **R**eduction
- **AWNE** **A**daptive **W**ind **N**oise **E**limination
- **Ni-VOX** **N**oise-Immune **V**oice **O**perated **S**witch



## Formally LAB & Field Tested and Recommended for Field use by:



BUNDESWEHR

Federal Office of Bundeswehr Equipment, Information Technology and In-Service Support (**BAAINBw - Germany**)

- Tested & Evaluated (WTD91)
- In Service with the German Armed Forces since 2013



UK Armoured Trials and Development Unit (**ATDU - UK**)

- Tested & Evaluated by ATDU
- Integrated in:
  - Challenger 2
  - Warrior
  - Jackal 2A

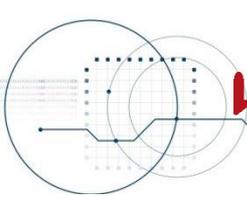
### 2.2.2 Ergebnis

Die Bordsprechanlage WISPR entfernt nahezu alle Hintergrundgeräusche aus der Sprachübertragung.

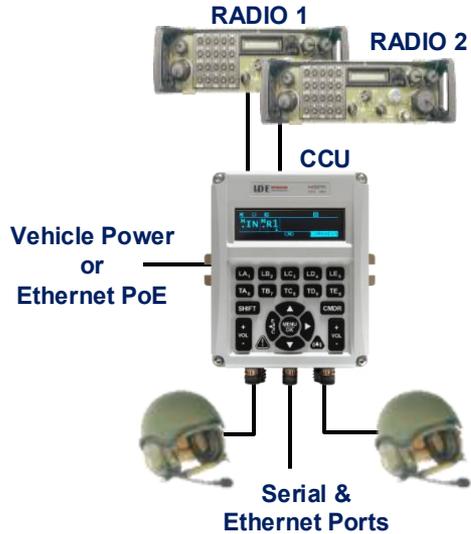
In its current state, the user recommends WISPR for entry into service on high noise associated AV's.

### Conclusion

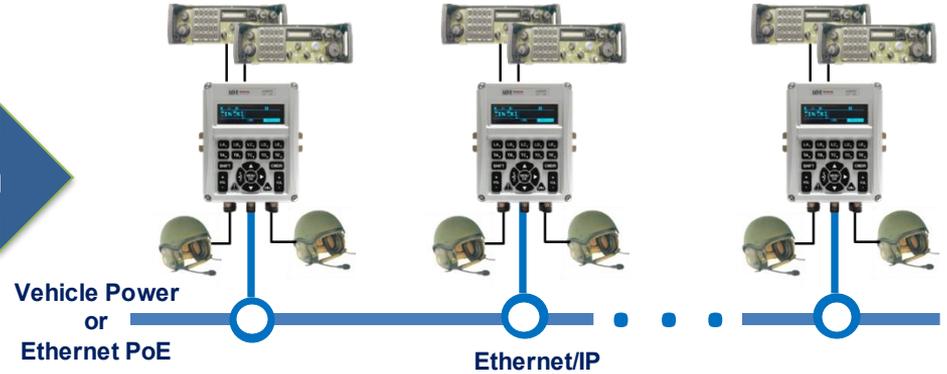
14. Subjectively and objectively assessed over a continuous period, WISPR has continued to perform above the user's expectations of a harness system. The noticeable difference when travelling at speed on a high noise platform is staggering. The benefits of having a system that can clean and filter environmental noise (whilst offering the same functionality of the existing system) can only serve to increase the fightability of the platform.



## “One CCU” – “Single Unit Intercom”



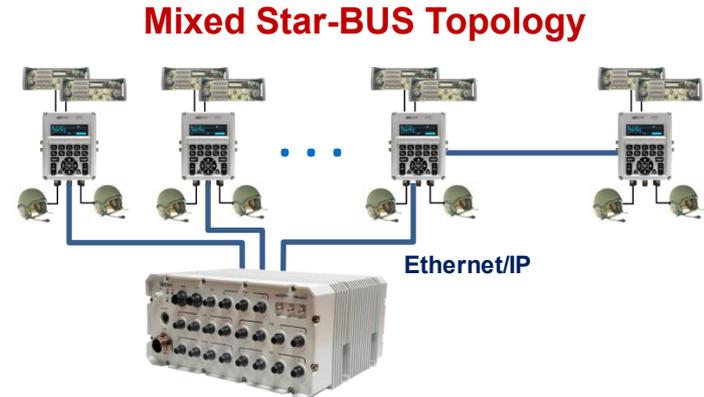
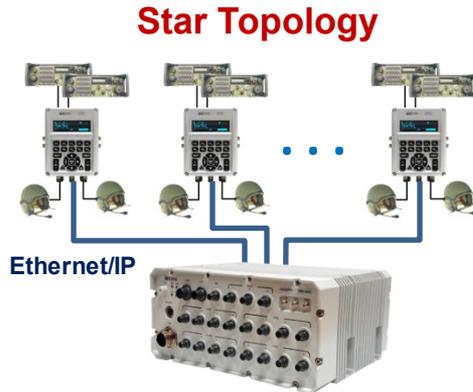
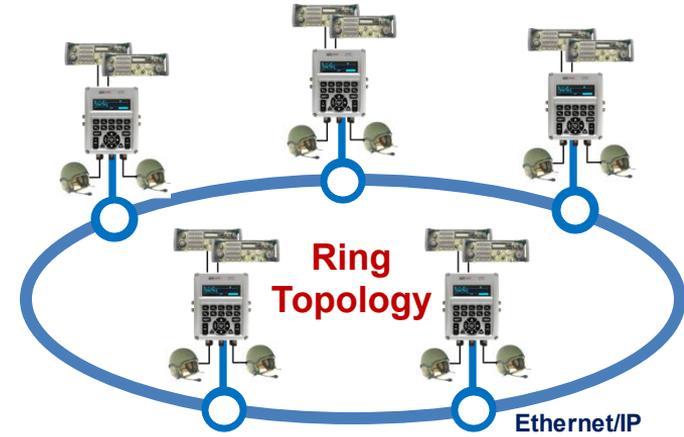
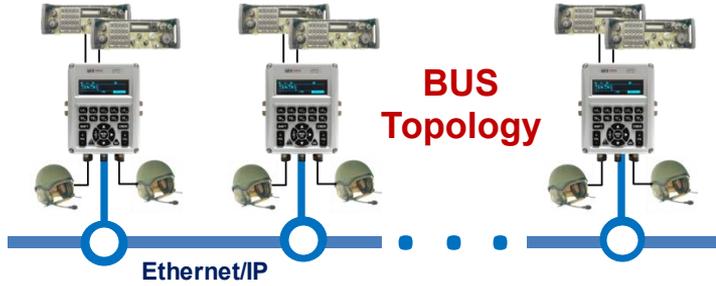
## Multi-User Large Platforms



- Independent functionality per user
- Ideal for small vehicles with limited space

- Seamless system expansion

## Support of multiple system topologies



## Software Defined Tactical Radio interface - SDTRI

- Connection to any type of tactical radio without hardware modifications
- System adaptation via software
- Menu driven selection of radio types

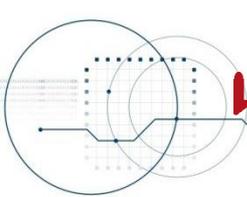


- Radio Transmission / Reception visual indications
- Tactical Radio Remote Control from user Terminal

**Operational Advantage**

**Cross-Platform System Portability**

 Thales PR4G / F@stnet / HD	 L3Harris Falcon II/III/IV Series	 SEM 70/80/93E/52A
 Thales PANTHER	 ELBIT PNR1000 Tadiran VRC 950/990/RT9001	 R&S M3TR / VR5000 / HR5000
 Trellisware TW Series MANET	 Silvus SC4000 MANET	 Dicom RF Series
 Kongsberg MRR	 EADS TRx3015	 TF HRM-7400
 Bowman VHF / HF radios	 IDE WiWAN SDR	 PMRs iCOM, Motorola Vertex, Kenwood ...



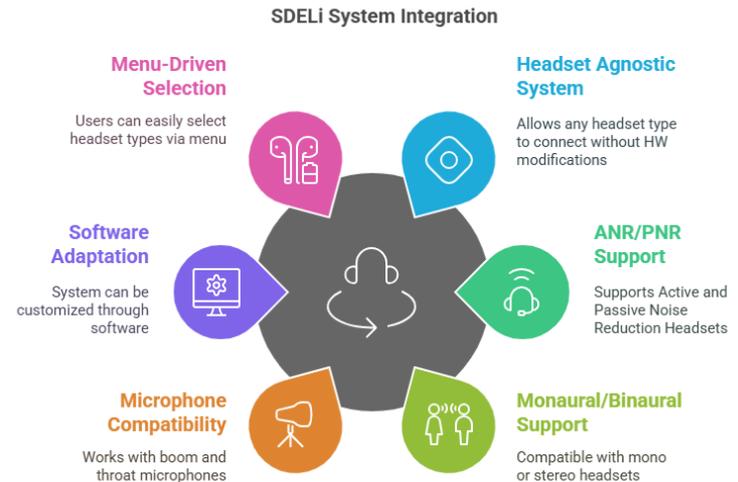
## Software Defined Electroacoustic interface - SDELi

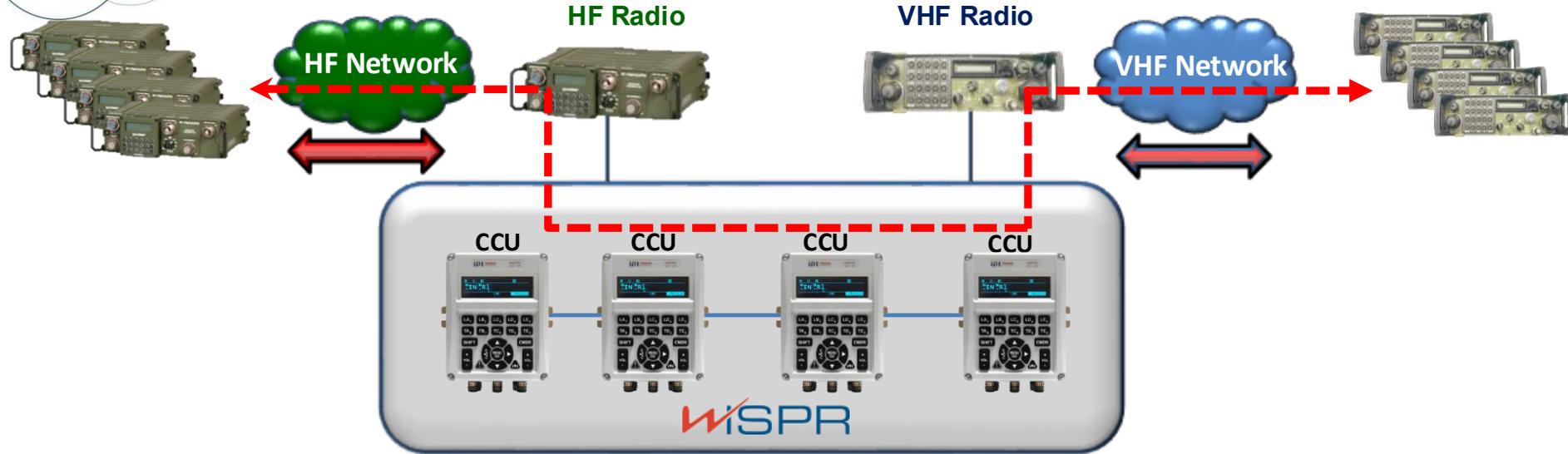
- Connection to any type of headset without hardware modifications
- Headset agnostic system
- Supports ANR / PNR Headsets
- Supports monaural & binaural headsets
- Supports headsets with boom or throat microphones
- System adaptation via software
- Menu driven selection of various headset types

**Operational Advantage**

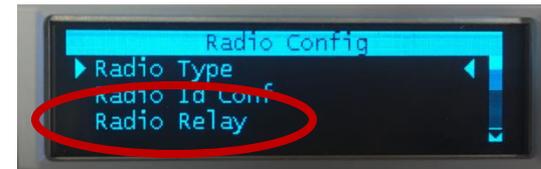
**Headset Agnostic System**

**Cross-Platform System Portability**

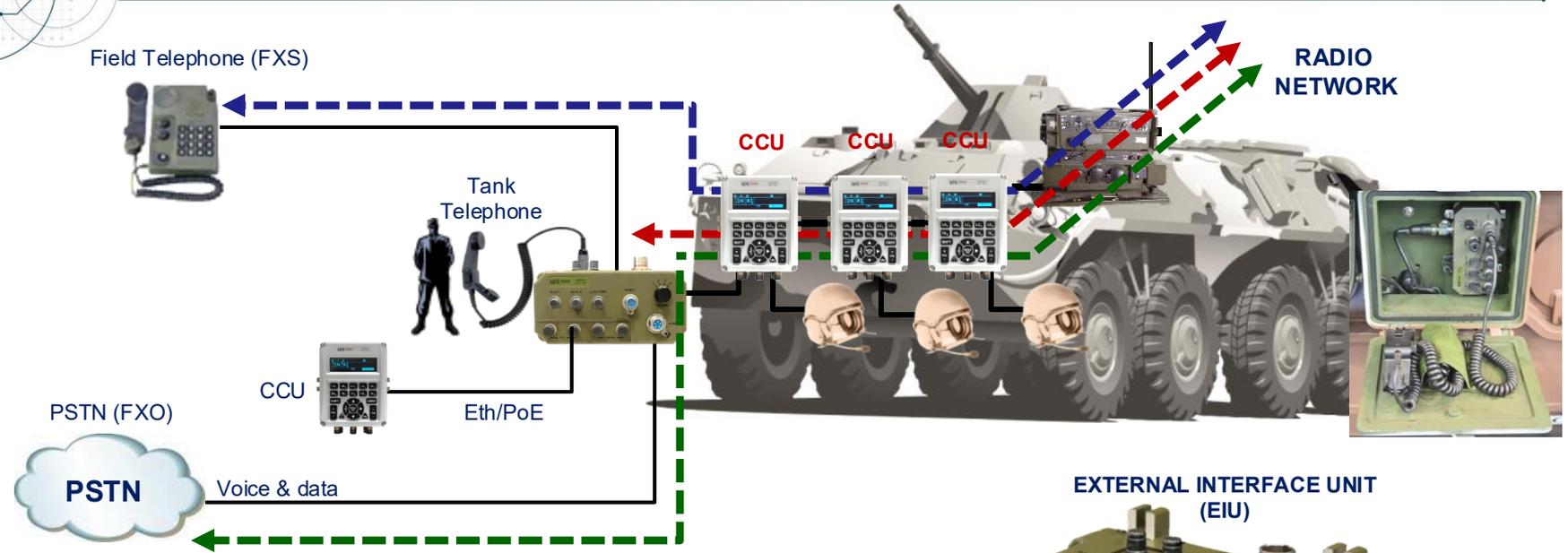




- Allows incoming audio from a Radio to **automatically** be re-transmitted to another Radio(s)
- Merges different Radio nets
- No extra cabling is required
- User configurable

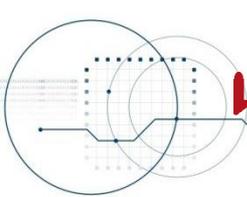


# WISPR<sub>evo</sub> External Wireline Communications



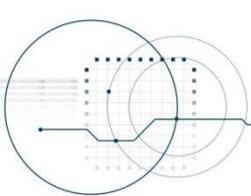
- Intercom & Radio access from Tank Telephone
- Intercom & Radio access from Field Telephone (FXS)
- Intercom & Radio access through PSTN (FXO)
- Headset, Handset, LAN interface & volume control



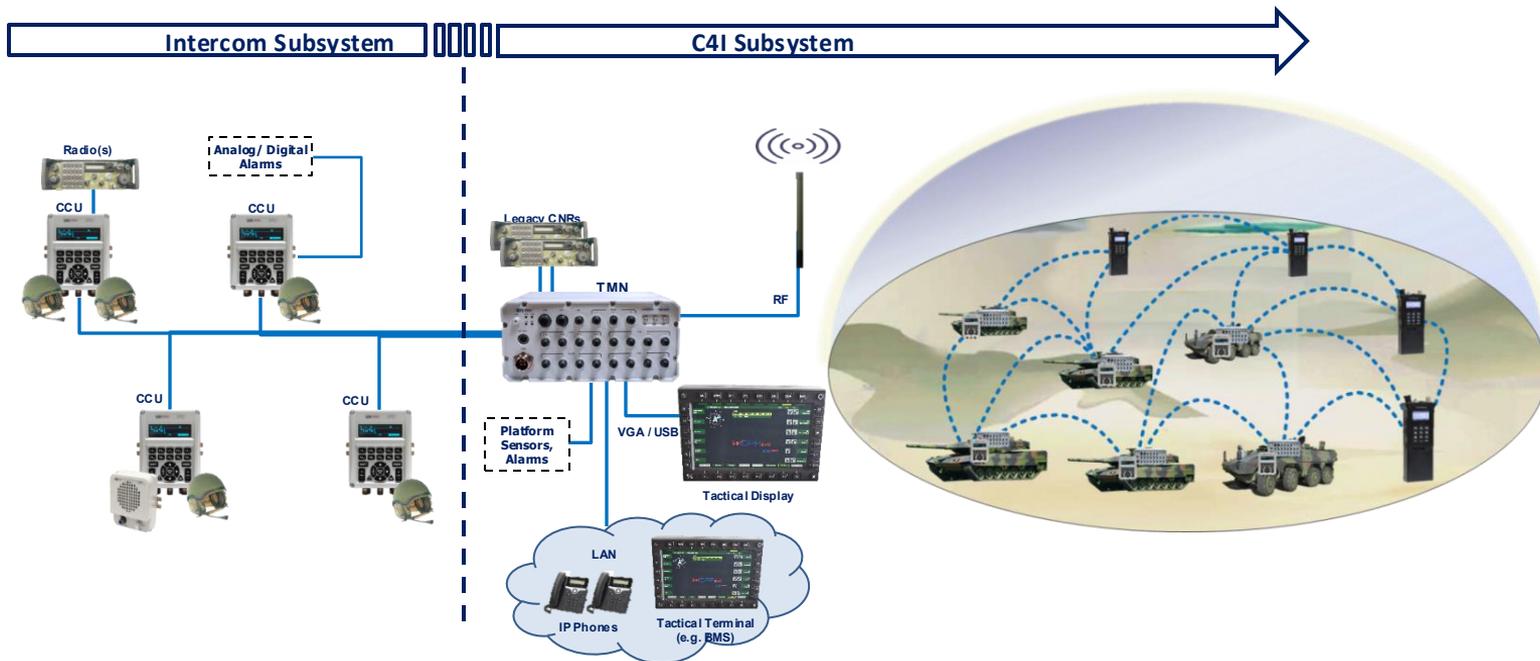


- Extends IP communications over copper or fiber for harsh environmental conditions
- It meets the demands for mobility, easy installation and the mechanical resistance necessary for deployment in the field
- Dual Copper Gigabit Ethernet Inputs
- 2x Expanded Beam connectors (HMA) outputs for fiber optic cables
- Single Mode Fiber up to 10Km
- 2x Copper twisted pairs ports (RJ45) outputs
- Dual Power input via POE and/or directly via Vehicle Power per MIL-STD-1275E
- Auto Crossover
- Auto Negotiation
- MIL-STD-461G
- MIL-STD-810H
- Fully outdoor – IP67



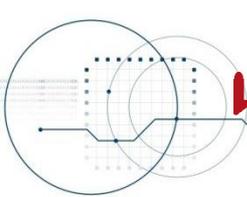


## OPTIONAL EMBEDDED MANET EXTENSION



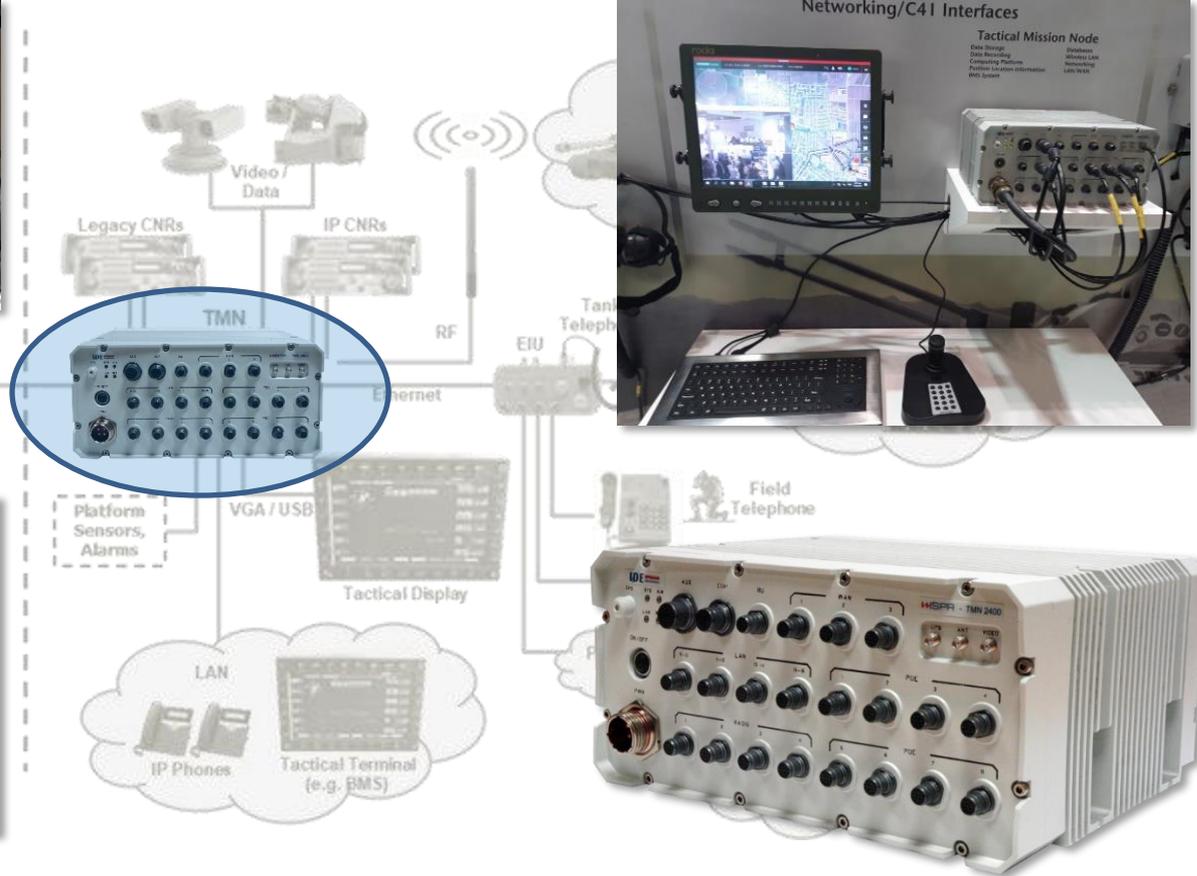
MIL-STD-461G  
MIL-STD-810H  
MIL-STD-1275E  
VG96916-5:2013  
ECE R10  
RoHS, REACH

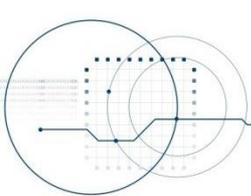
Optionally available per TEMPEST SDIP27



- Full duplex hands-free Intercom (all-to-all)
- Full duplex hands-free closed groups (many-to-many)
- Full duplex selective calls (point-to-point private calls)
- Commander override
- User emergency notification
- Listen ALL
- Radio Silence mode of operation
- PTT-based radio listen/talk
- Multiple radio broadcast
- Short Text Messaging
- Automatic Radio Relay
- Loudspeaker playback
- PSTN / SIP calls
- Field/Tank telephone calls
- Configurable User Access Rights
- Covert Conditions Operation Mode
- Alarms and Faults monitoring, Voice warnings
- Extensive built-in tests (start-up, run-time, on demand)
- Configuration database for Vehicle / Radio / Headset types
- and more...

# WISPR<sub>evo</sub> Tactical Mission Node (TMN)



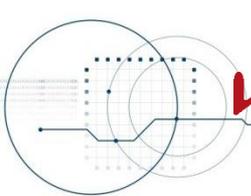


- Extends WiSPR system to support C4I applications & IP Networking
- Platform sensors' Integration
- Integrated Router, PoE L2/L3 Switch, SIP Telephony, Radio Gateway, VoIP Gateway
- Intra-vehicle Routing, Party lines, Conference Groups, Remote Radio Access
- Supports IP and Legacy CNRs for Voice and Data – Radio Relay
- IPv4 and IPv6 Support
- Firewall, Data Filtering, IPSec, SSL, AES, VLAN, NAT
- Advanced IP Routing (RIP, PIM, OSPF, IGMP, PPP) and IP QoS
- Compatible with all CCU user terminals

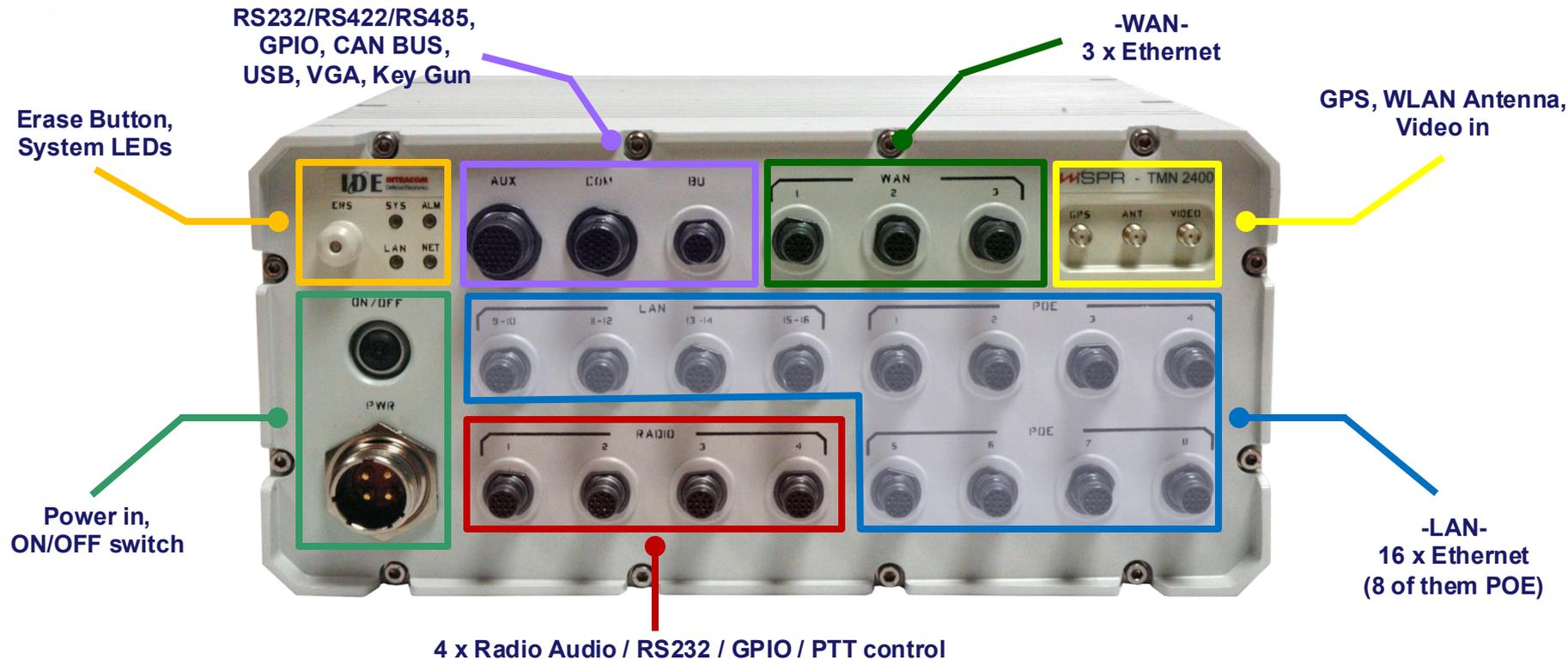


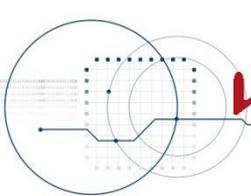
- Network Services (DNS, FTP, DHCP, HTTPS, and more...)
- Key-gun Support and Security Management
- Embedded Computer Module
- Embedded Military Secure WiFi or MANET

**Provides the Capability to embed the Vehicle C2 Software**



## TMN 2400 Interfaces (Typical Configuration)

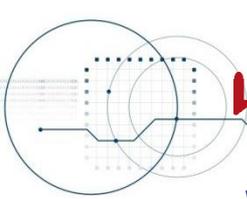




# WISPR<sub>evo</sub> TMN-2400 Basic Modules



TMN can provide solutions that meet specific customer requirements by using Military qualified and SWaP-C optimized product variants.



## WiSPR TMN Security provides:

- AES-256 COMSEC
- High levels of **physical security** mechanisms such as **strong enclosure and tamper detection/response circuitry** that zeroizes all sensitive data when the removable covers/doors of the TMN are opened
- External **erase button** that zeroizes all sensitive data
- Encryption keys storage in **encrypted memory**
- **Key loader** utilized for storing cryptographic keys that can be transferred into the system

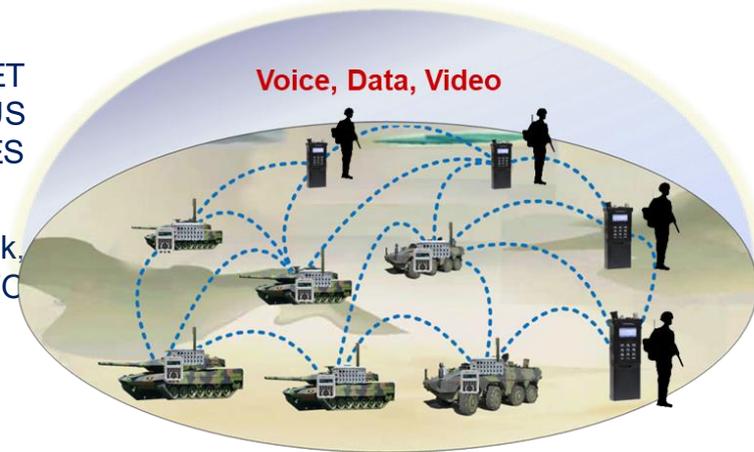
**Key management station** : an additional desktop-based subsystem supplied to handle the cryptographic keys and other related security parameters during the life-cycle of the keys, including key generation, key loader zeroization, and key uploading to key loaders.

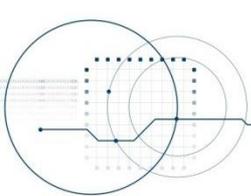
## WiSPR TMN MANET module

The WiSPR TMN integrates optionally an advanced field-proven MANET module based on TrellisWare waveform, which complies with US standards (such as FIPS-140-2) and incorporates a US implemented AES 256 COMSEC, widely used in the US Forces.

This MANET waveform is used by Canada, Czech Republic, Denmark, Germany, Greece, Spain, United Kingdom, United States and other NATO members.

- Up to 250 simultaneous users
- Up to 16 Mbps of throughput
- Multi-Hop transparent to the user
- Frequency range
  - L-UHF: 225–450 MHz
  - U-UHF: 698–970 MHz
  - L/S Bands: 1250–2600 MHz
- 0.1–2 W Transmit power
- Simultaneous voice, data, video and PLI
- Fixed or mobile tactical operations
- Interoperable with Trellisware<sup>®</sup> handheld radios





**External Hardware Interfaces**

- Ethernet / Optical
- Sync/Async Serial
- USB / CAN Bus
- Radio / Headset
- Audio / Analog
- Analog Video
- RF
- Digital I/O
- Digital Video / Display
- Power-Over-Ethernet (PoE)
- ... and more

**Internal Hardware Interfaces**

- PCI / PCI Express
- SATA
- USB
- Ethernet
- ... and more

Next Generation, High Speed,  
High Performance Hardware  
Architecture.

Compatible with COTS/ MOTS  
Standards.

**Software Interfaces**

- VoIP (Voice-Over-IP)
- RoIP (Radio-Over-IP)
- SIP
- MQTT
- HTTP / HTTPS
- Databases
- ... and more

# Soft User Terminal

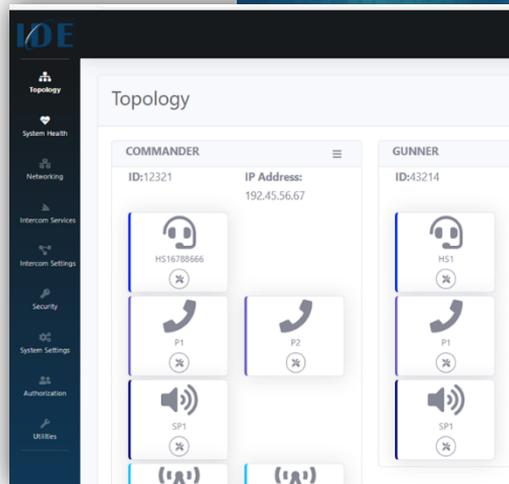
## NGVA-based Software CCU Client

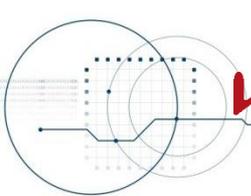
- CCU Remote Control & Application Software
- Integrate CCUs' functions in multifunction NGVA displays



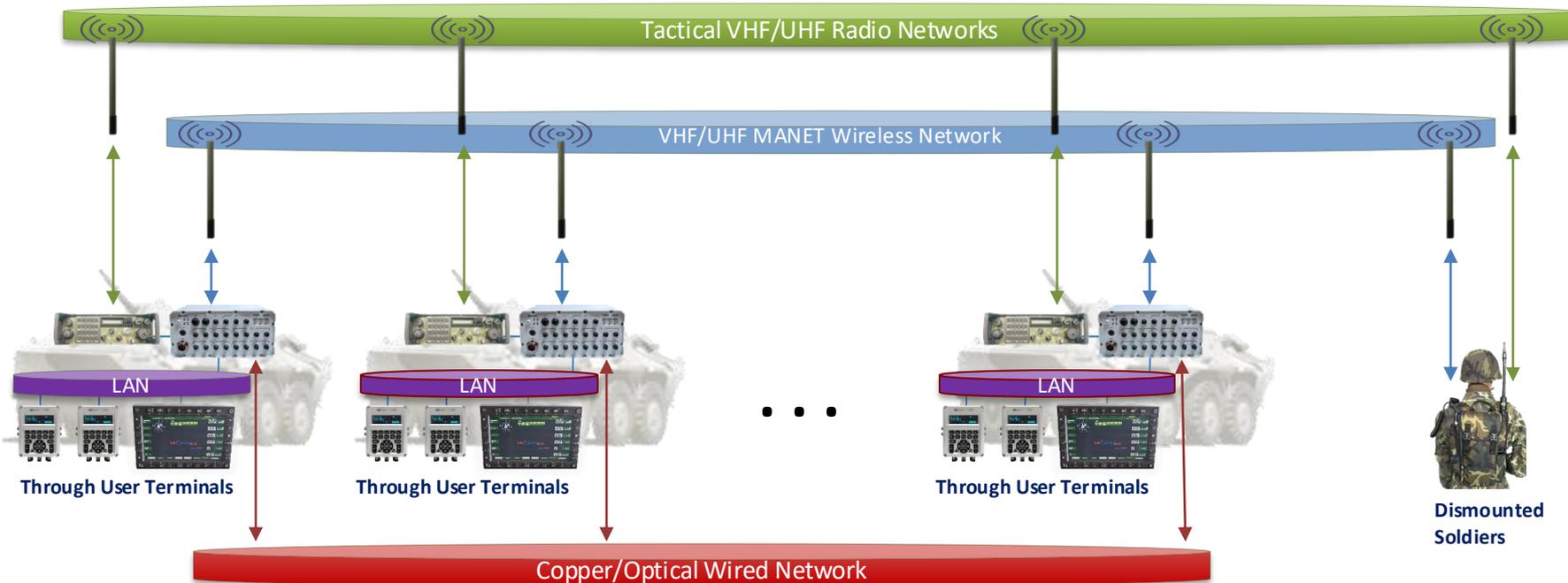
# WISPR<sub>evo</sub> System Management

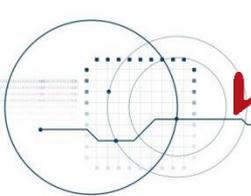
## Web-based Management Application





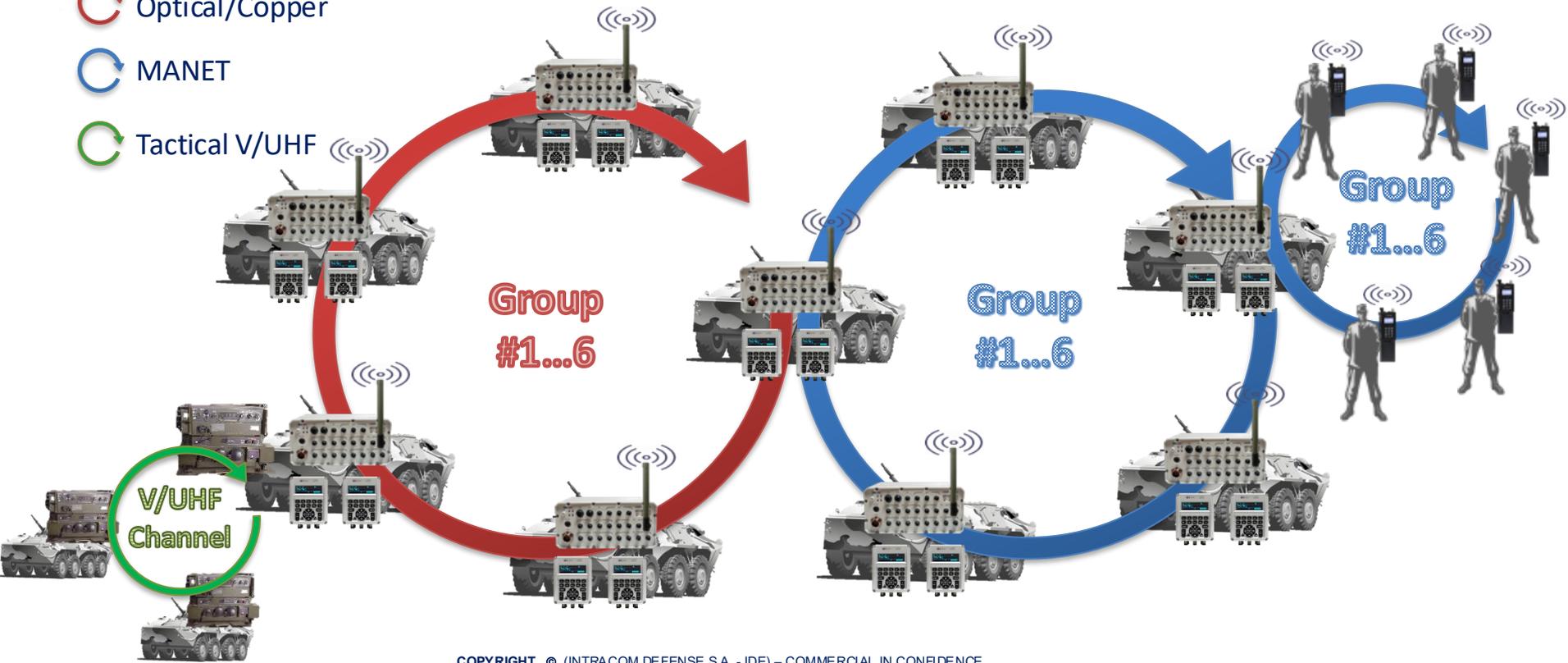
## Integrated Voice/Data/Video Communications Over Different Networks





## Full/Half Duplex Conference Groups over IP-based Wireless/Wired Networks

- Optical/Copper
- MANET
- Tactical V/UHF



# WISPR<sub>evo</sub> Internal Closed Groups Service



Closed Groups

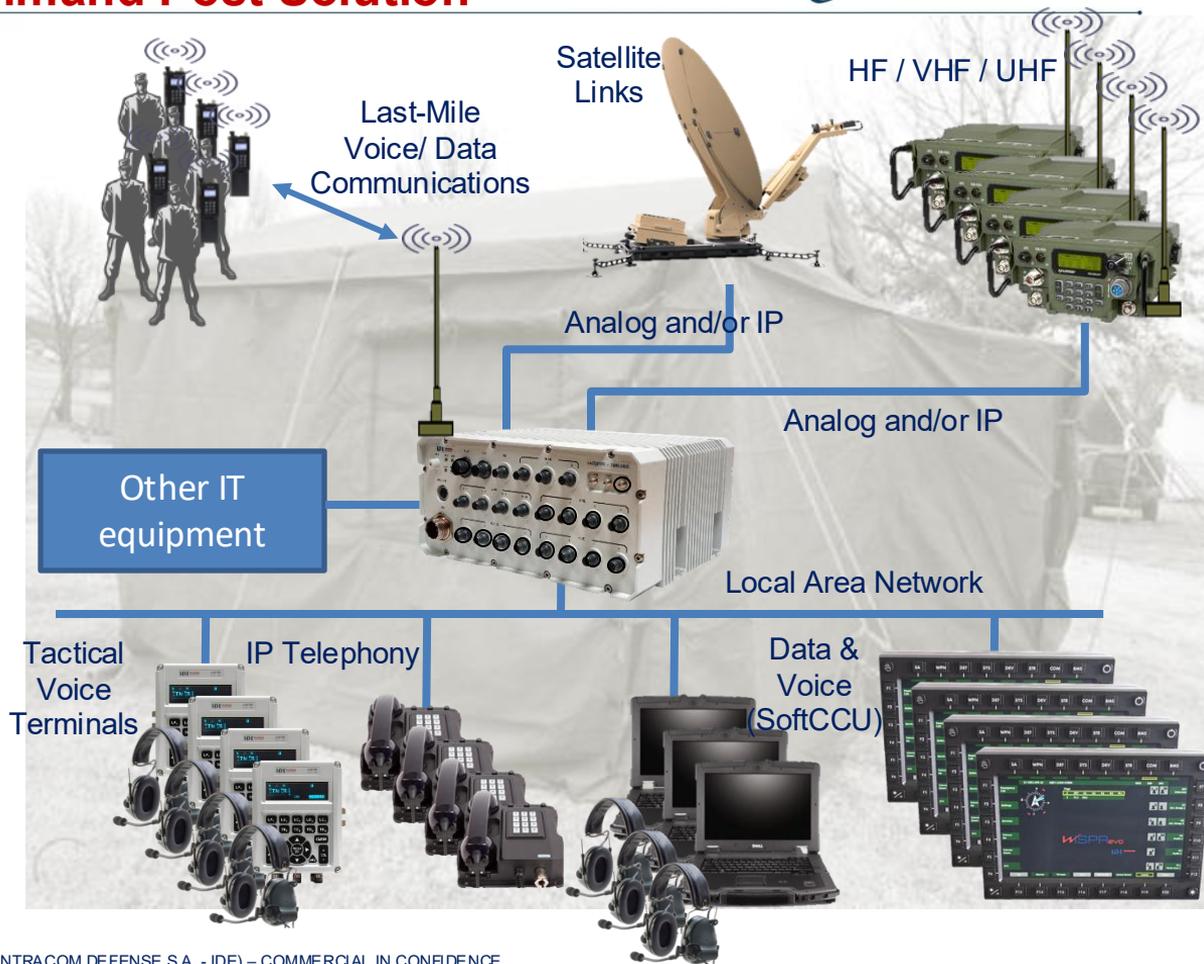
### Groups

	G1	G2	G3	G4	G5
<b>COMMANDER</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CMD_A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>DRIVER</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DRV_A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DRV	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>GUNNER</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
GNR_A	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
GNR	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Users

## Tactical Networking and Command Post Solution

- Improve mobility - Fast deployment
- Reduced hours of setup
- More than 200 voice users simultaneously
- Complete IT infrastructure
- VoIP & RoIP communications
- Reduce size, weight and power requirements
- Reliable and ruggedized to adapt to mobility over any terrain



## Operational Feature

### True Noise Free Communications

- *Integrates the world leading Dynamic Noise Reduction*
- *Conforms to EU hearing protection safety requirements*
- *Increases Crew Situation Awareness*

### Decentralized Architecture

- *Increased Reliability & Operational Availability*
- *Less integration / installation / maintenance / training / life cycle costs*

### Identical Crew Terminals

- *Cross Platform Transportable*
- *Less spares requirements*

### Split Ear-Phone Radio Allocation Function (SERF)

- *Enhanced Situation Awareness*

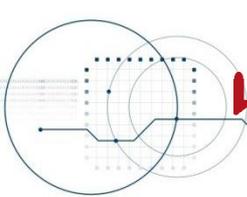
### Embedded Secure Last Mile Comms

- *Supports fast data & voice transfer under low E/M footprint*

### Growth Potential

- *Plug and Play System expansion*





## Technology Feature

### Open Architecture – Full IP technology

- *Standardized interfaces & protocols*
- *Seamless integration with legacy and modern vehicle subsystems*
- *Cross-platform transportable with embedded vehicle-profile library*

### Software defined system

- *Easy Functionality Customization to End-User special requirements*
- *Platform / Radio agnostic solution*

### Noise Reduction adaptable to platform noise profile

- *Speech intelligibility as high as 99,4%*

### Software defined Tactical Radio interface (SDTRI)

- *Soft integration of all types of radios without hardware changes*

### Automatic Radio Rebroadcast Mode (ARRM)

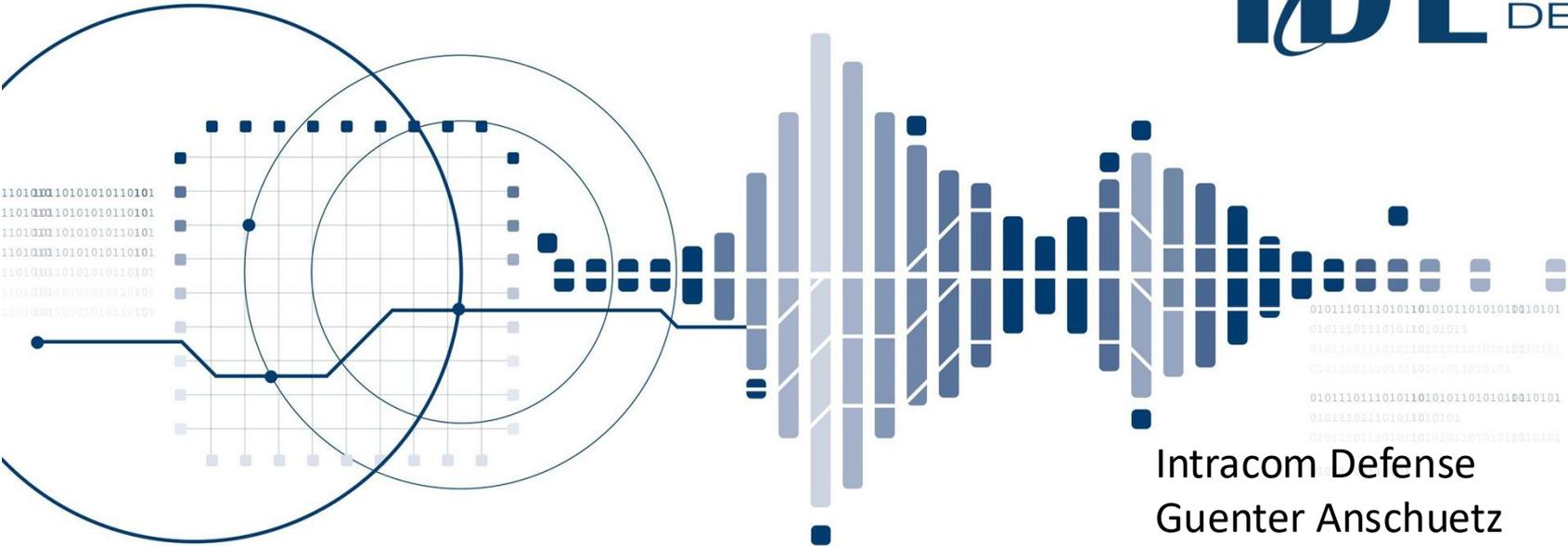
- *Seamless merge of heterogeneous radio networks*

### Extended CIS capability – Integrated C4I

- *Transforms the vehicle to an internetworking multi-purpose node*
- *Versatile configurations, tailored to end user requirements*



# Thank you for your attention !



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