



PRECISION TECHNIC DEFENCE
PROVIDING TACTICAL SOLUTIONS

Fusion of TDL on the Dismounted Warrior

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LEGEND

- AIR-TO-GROUND COMMUNICATIONS
- LINK-TO-UNIT COMMUNICATIONS
- DATA COMMUNICATIONS

- FIBER - DATA
- FIBER - LINK
- DATA LINK

DIGITALLY AIDED CLOSE AIR SUPPORT (DACAS)

BBTech Hub Systems facilitates DACAS by seamlessly integrating COM, SAT, SML, and/or Link-16 with preferred end-user software. BBTech Hub Systems also integrates all peripheral hardware such as COM, SAT, and IFF to ensure you're maximizing your SAT and data links for DACAS.

COMBAT SEARCH & RESCUE (CSAR) & MEDEVAC SUPPORT

BBTech Hub Systems facilitates CSAR and MeDEVAC support by integrating systems and hardware such as COM, SAT, and/or Link-16 with your preferred software. All peripheral hardware can be controlled through your Windows or Android OSU, maximizing the effectiveness of your air and medical operations.

HELICOPTER CALL FOR FIRE (CFF)

Helicopter CFF missions can be executed by integrating the BBTech Hub Systems with a variety of systems such as COM, SAT, SML, and/or Link-16 with your preferred software. BBTech Hub Systems creates all peripheral hardware such as COM, SAT, and IFF to make it easy for you to integrate making your Windows or Android OSU the key to your Helicopter CFF ops.

TACTICAL OPERATIONS CENTER OPERATIONS COMMANDER

BBTech Hub Systems facilitates your Tactical Ops Center (TOC) operations by integrating all peripheral hardware such as COM, SAT, SML, and/or Link-16 with your preferred software. BBTech Hub Systems creates all peripheral hardware such as COM, SAT, and IFF to make it easy for you to integrate making your Windows or Android OSU the key to your TOC ops.

ELECTRONIC WARFARE SUPPORT

BBTech Hub Systems facilitates EW support by integrating all peripheral hardware such as COM, SAT, SML, and/or Link-16 with your preferred software. BBTech Hub Systems creates all peripheral hardware such as COM, SAT, and IFF to make it easy for you to integrate making your Windows or Android OSU the key to your EW ops.

SOF GUNSHIP CALL FOR FIRE

BBTech Hub Systems seamlessly facilitates SOF Gunship CFF by integrating a variety of data links such as COM, SAT, SML, and/or Link-16 with your preferred software. All peripheral hardware such as COM, SAT, and IFF to make it easy for you to integrate making your Windows or Android OSU the key to your Gunship CFF ops.

SOF MFF OPERATOR

The SOF Call-For-Fire Hub System can be integrated with virtually any existing MFF system to facilitate MFF operations by taking advantage of the BBTech Hub System's capabilities, such as Link-16, SML, and/or Link-16, to provide SA of the MFF team and manage all Call-For-Fire software and data.

STAT WITH 4-PORT CONFIG

The STAT With 4-Port Config is a flexible, modular, and scalable system designed for use in a variety of environments. It can be configured to support a wide range of applications, from basic data links to complex, multi-protocol, multi-protocol configurations.

INFANTRY MEMBER

The STAT Call-For-Fire Hub System can be used by an infantry member to facilitate communication with a variety of systems, including COM, SAT, SML, and/or Link-16, to ensure they are always connected to the command center.

SUAS CONTROLLER

The STAT Controller can employ the STAT Call-For-Fire Hub System to facilitate communication with a variety of systems, including COM, SAT, SML, and/or Link-16, to ensure they are always connected to the command center.

GROUND FORCE COMMANDER

A Ground Force Commander can employ the STAT Call-For-Fire Hub System to facilitate communication with a variety of systems, including COM, SAT, SML, and/or Link-16, to ensure they are always connected to the command center.

SPECIAL OPERATIONS FORCES TEAM LEADER

A Special Operations Forces Team Leader can employ the STAT Call-For-Fire Hub System to facilitate communication with a variety of systems, including COM, SAT, SML, and/or Link-16, to ensure they are always connected to the command center.

SWMS CONTROLLER

A SWMS Controller can employ the STAT Call-For-Fire Hub System to facilitate communication with a variety of systems, including COM, SAT, SML, and/or Link-16, to ensure they are always connected to the command center.

EOD UGV CONTROLLER

EOD UGV Controller can employ the STAT Call-For-Fire Hub System to facilitate communication with a variety of systems, including COM, SAT, SML, and/or Link-16, to ensure they are always connected to the command center.

SOF OPERATOR

The STAT Call-For-Fire Hub System can be used by an SOF operator to facilitate communication with a variety of systems, including COM, SAT, SML, and/or Link-16, to ensure they are always connected to the command center.

SOFT TEAM MEMBER

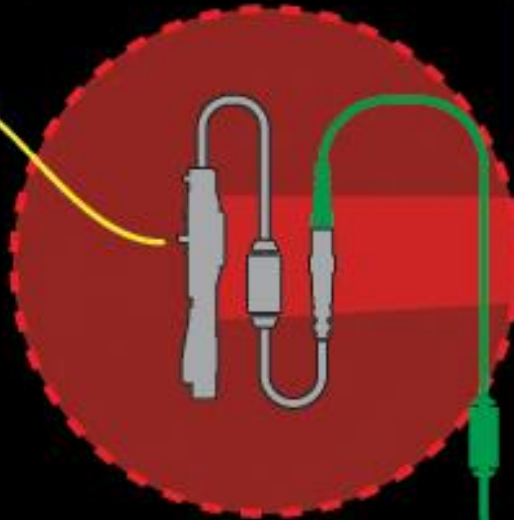
The STAT Call-For-Fire Hub System can be used by a soft team member to facilitate communication with a variety of systems, including COM, SAT, SML, and/or Link-16, to ensure they are always connected to the command center.

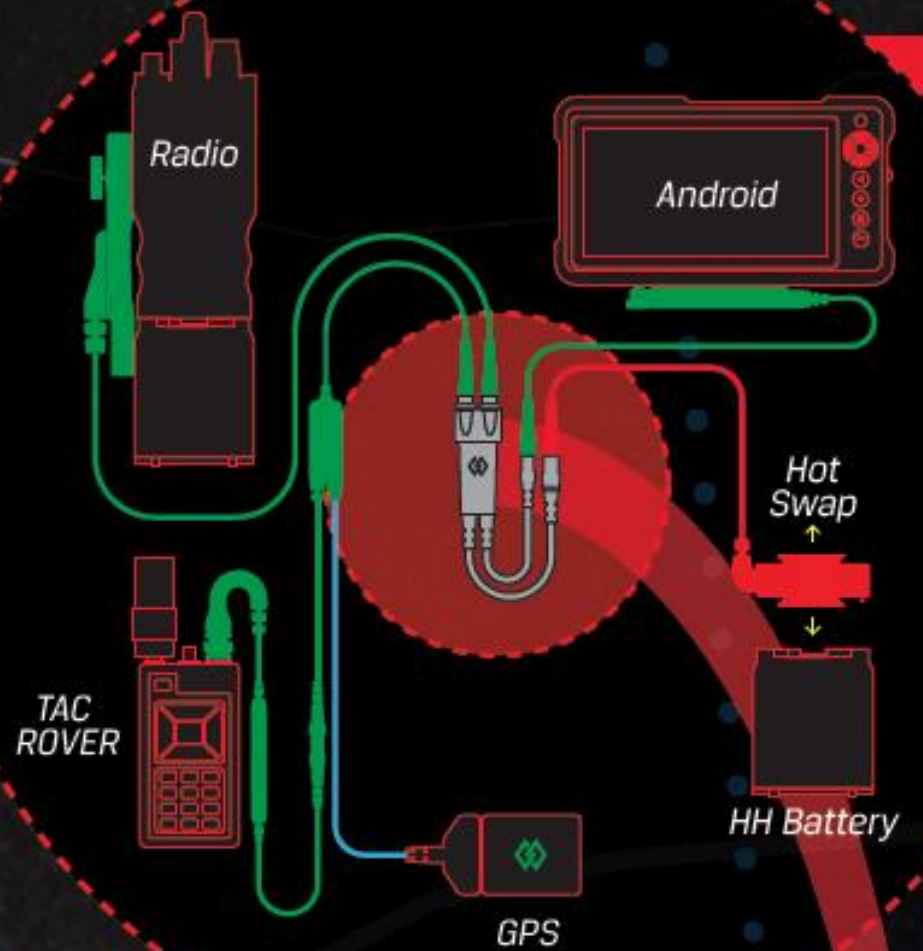
STAT WITH 4-PORT CONFIG

The STAT With 4-Port Config is a flexible, modular, and scalable system designed for use in a variety of environments. It can be configured to support a wide range of applications, from basic data links to complex, multi-protocol, multi-protocol configurations.

INFANTRY MEMBER

The BARE Kit 1-Port Hub System can easily integrate with virtually any existing kit setup to facilitate SA with the rest of the Operator's unit.



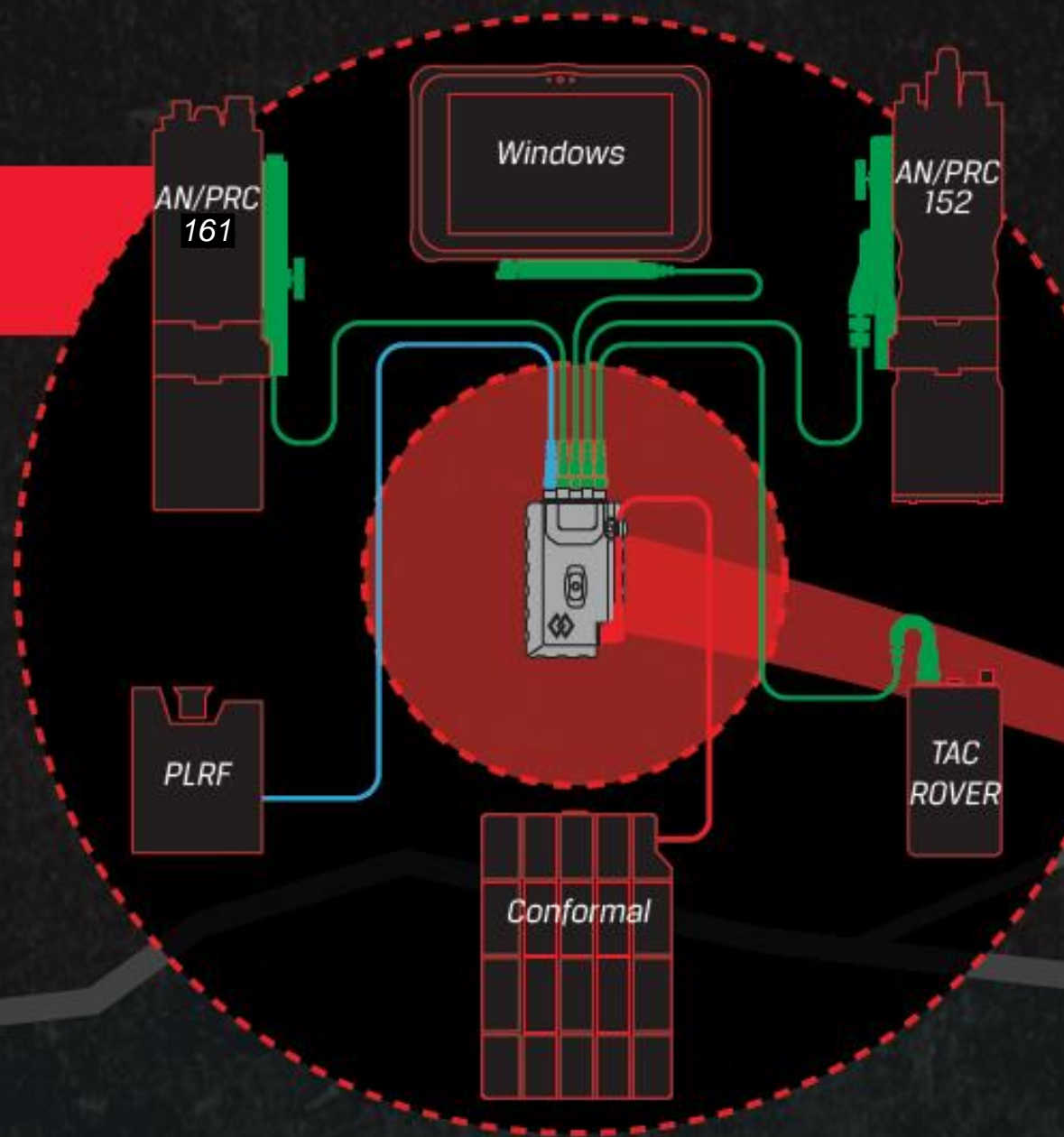


JTAC WITH 2-PORT LIGHT CONFIG.

JTACs can employ the APEx 4-Port or Assaulter 2-Port Hub Systems to support DACAS. The hub systems are scalable so the JTAC can use their desired peripherals to maintain the lowest profile possible. From a Radio and VDL combo for a JTAC light to a complete Datalink Enabled JTAC with a full suite of peripherals.

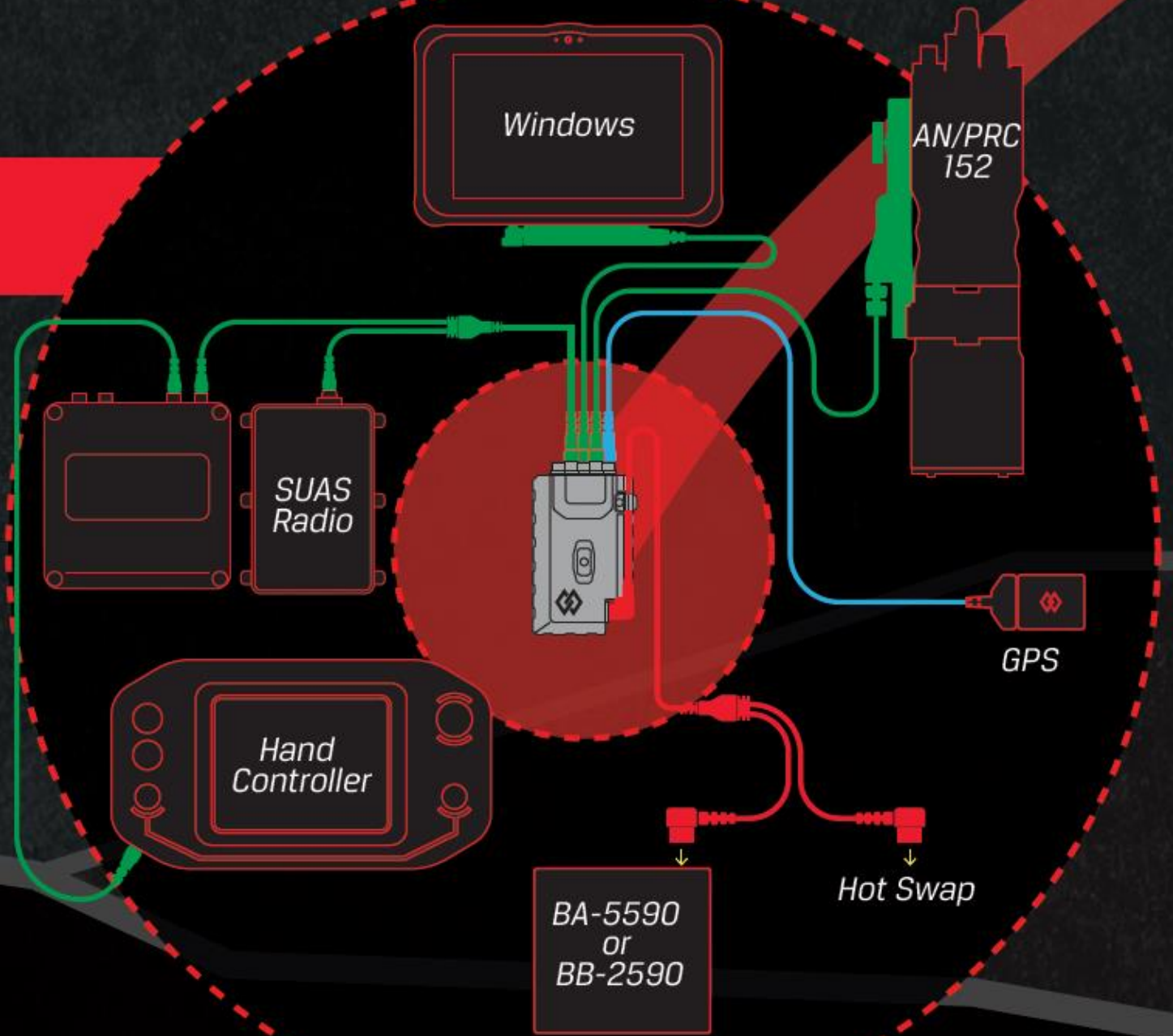
JTAC WITH 4-PORT CONFIG.

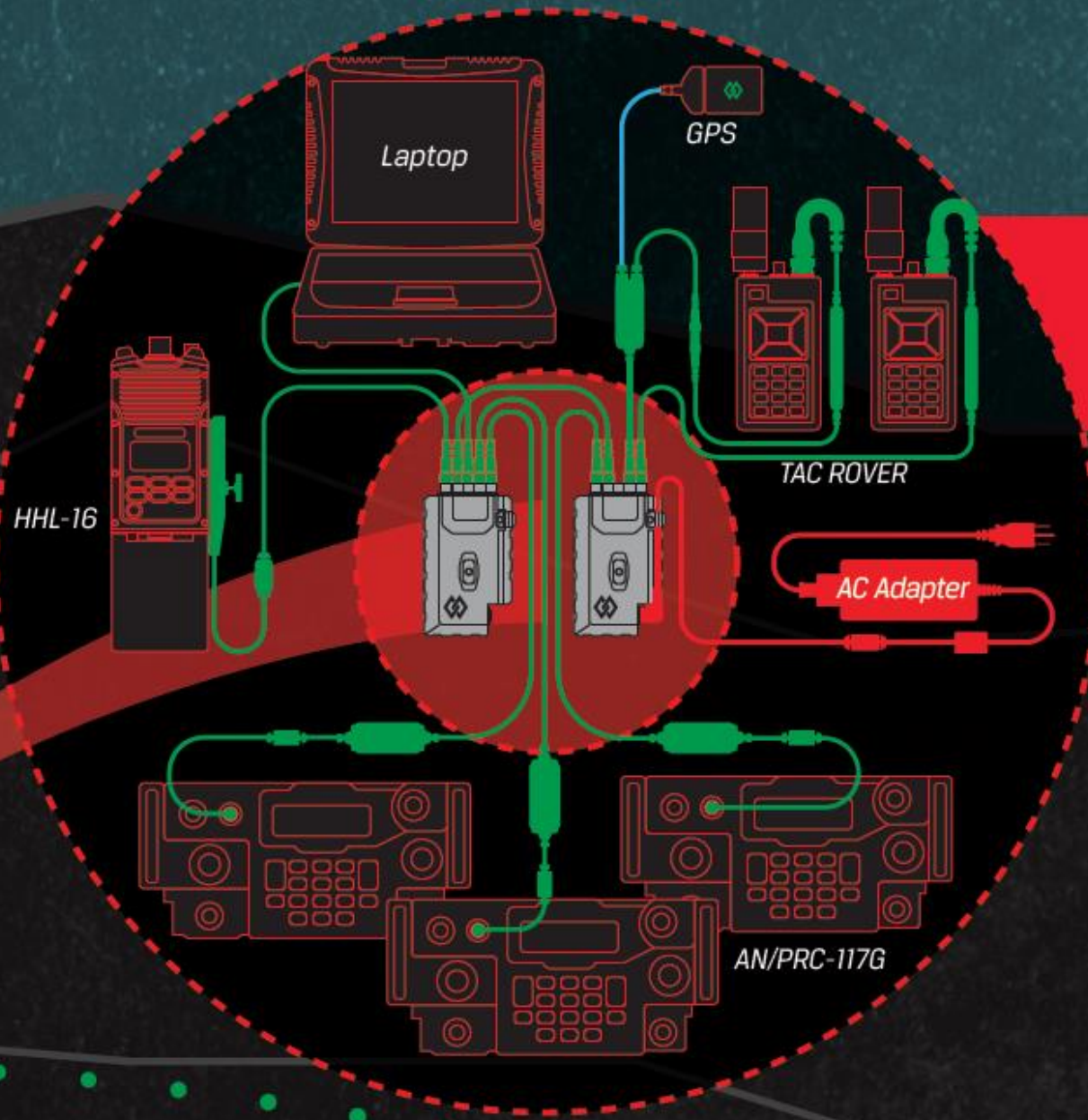
The BDATech Hub Systems are scalable, enabling a JTAC to use the desired peripherals that will maintain the lowest profile. For example, a radio and VDL combo can be used for a JTAC light setup or for a more robust set up, a full set of peripherals can create a Datalink Enabled JTAC.



SUAS CONTROLLER

The SUAS Controller can employ the APEX 4-Port Hub System for dismounted operability of the SUAS without additional weight and take advantage of multiple peripherals. This allows the SUAS Controller to move, shoot, and communicate without having to take out a cumbersome laptop or GCS.





TACTICAL OPERATIONS CENTER OPERATIONS COMMANDER

BDAtech Hub Systems can be used in static locations such as a TOC or a Command Vehicle. For example, multiple APEX 4-Port Hub Systems can be daisy chained together to facilitate a small-footprint C4ISR center that is easily transported.



The Land TDL Problem

- War fighters can only carry so much
- Military operations with coalition forces
- Gateways on the battlefield need to be deployed forward
- Human Machine Interface
- Applications to feed Common Operating System
- Supporting software and servers



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The Tactical Load Carriage Problem





Australian soldier load carriage: From Gallipoli to Afghanistan – Rob Orr, Bond, University, 2015

- WW1 Gallipoli – 27-33.5kg (59-62lbs)
- WW2 PNG – 20-41kg (48-90lbs)
- Vietnam Signallers – 47.5-56kg (105-123lbs)
- Timor Signallers – 40-50kg (99-110lbs)
- Middle East Patrol Order – 36.9 ± 10.8 kg (58-105 lbs)
- Middle East Marching Order – 65.1 ± 16.3 kg (107-180lbs)



Man and Machine!





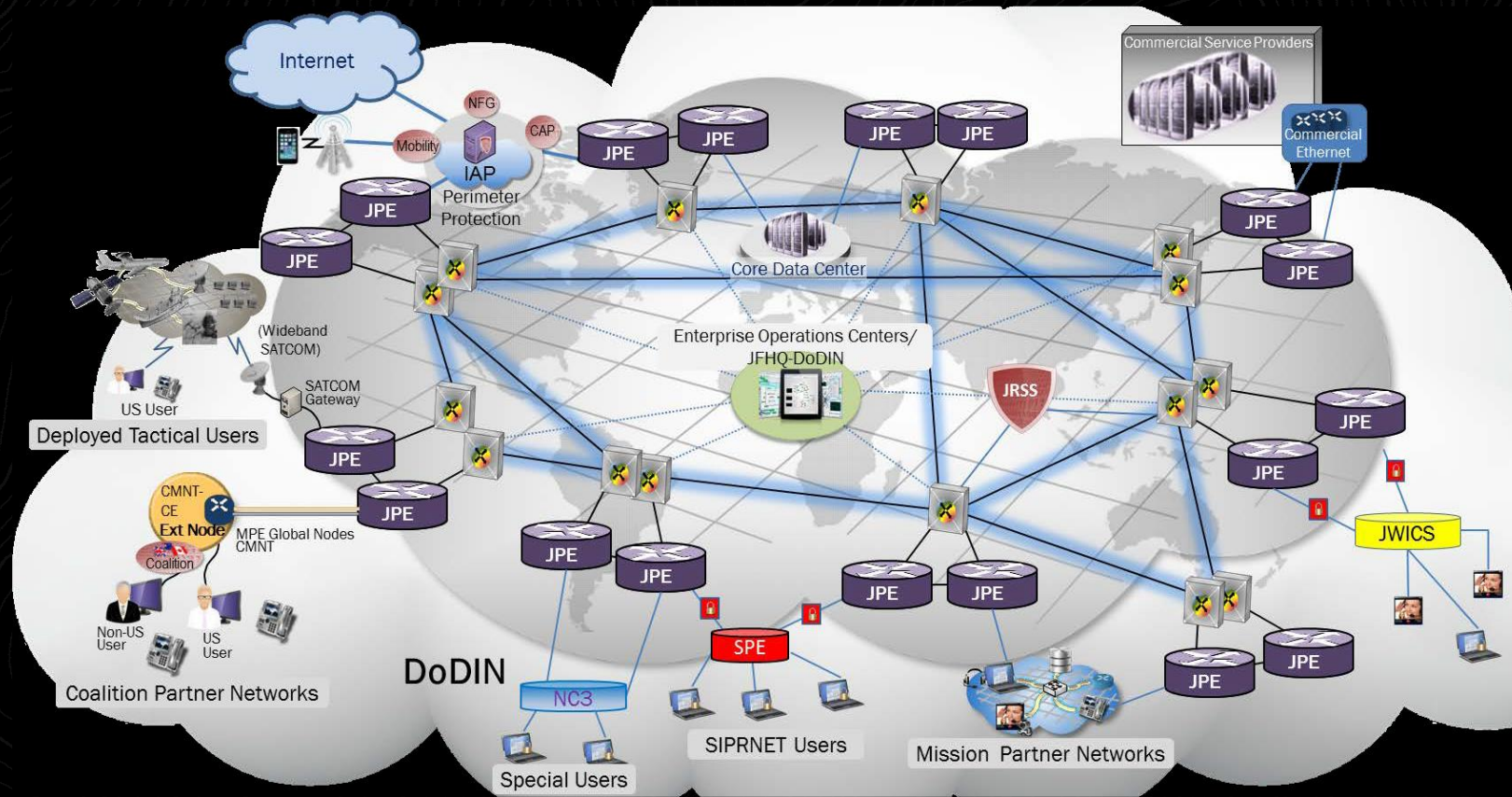
International military intervention against ISIL

- 19+ Nations involved in the airstrikes in Syria
 - A10, B-1, F-15E, F-16, CF-18, F/A-18E, F22
 - Tornado, Mirage, Rafale
 - Reaper
-
- Requires access to VMF, Link 16, Link 22, CoT, CDL, VDL, TCDL...
 - HF, VHF, UHF, LoS, BLoS, Satcom, ANW2, TSM.....

Can we solve this problem with Gateways?



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Reducing Size, Weight and Power





Human Machine Interface


- Small enough to reduce SWaP requirements
- Ruggedised to survive environment
- Provide enough compute power for multiple applications
- Be capable of accepting multiple ethernet inputs
- Fuse data onto a common operating picture
- Reduce cognitive burden on the operator



End User Devices

- Android OS
 - Samsung S9 Tactical Edition
 - Getac MX-50
 - Panasonic FZ-B2
- Windows OS
 - Panasonic FZ-M1
 - MX-50 (in development)

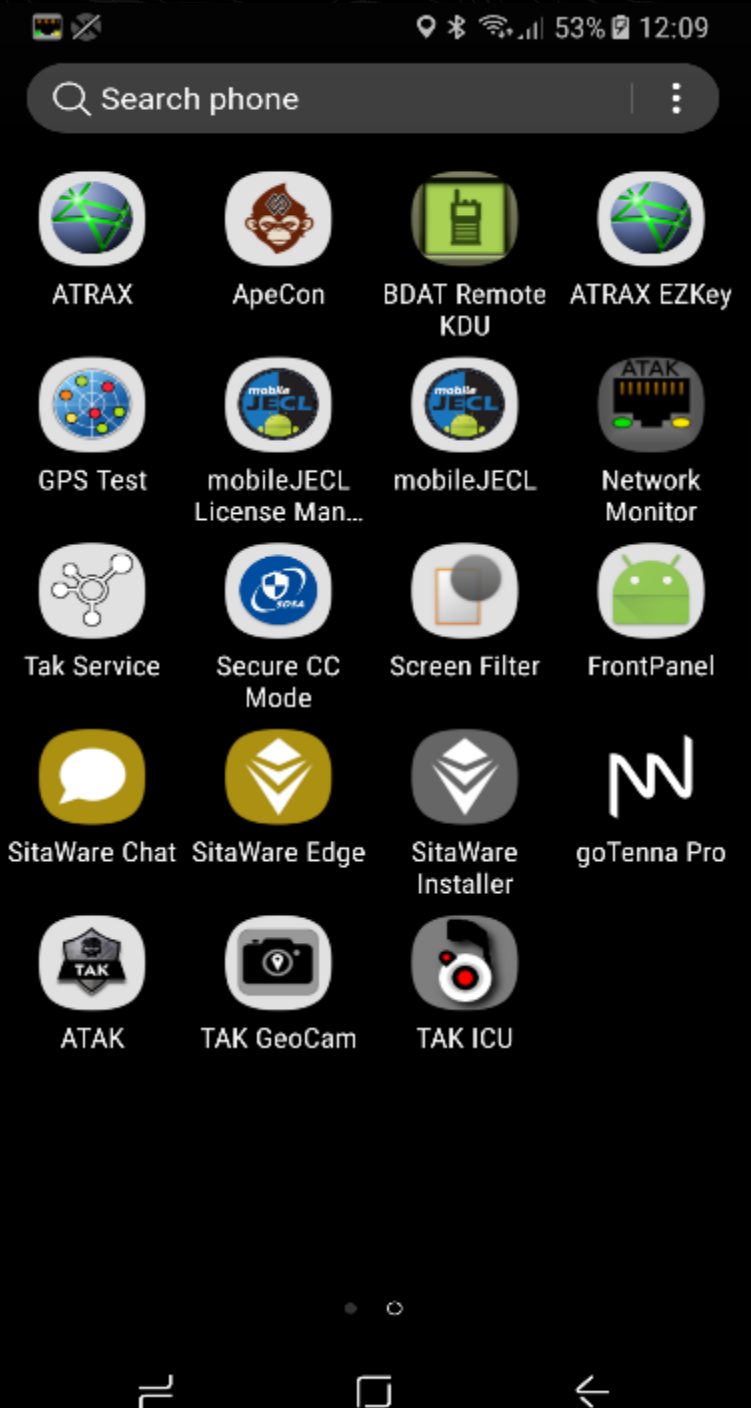
SAMSUNG **Galaxy S9** Tactical Edition

 **Protocols Supported**

RNDIS	Enable Ethernet Over USB, Provide a virtual Ethernet link
ASIX	Enable USB to Serial applications
CDC ECM	Ethernet Control Model (ECM) – Ethernet driver
CDC EEM	Ethernet Emulation Model (EMM) – Ethernet driver
CDC NCM	Network Control Model for Ethernet-over-USB applications, Integrate with L3 WPAN
Multiple Ethernet Interface	Connect to Ethernet devices such as Taclink 3300 and SIR 2.5 either using RNDIS/ASIX
Support PPPD	Enable connection to Harris 152A/Harris SA

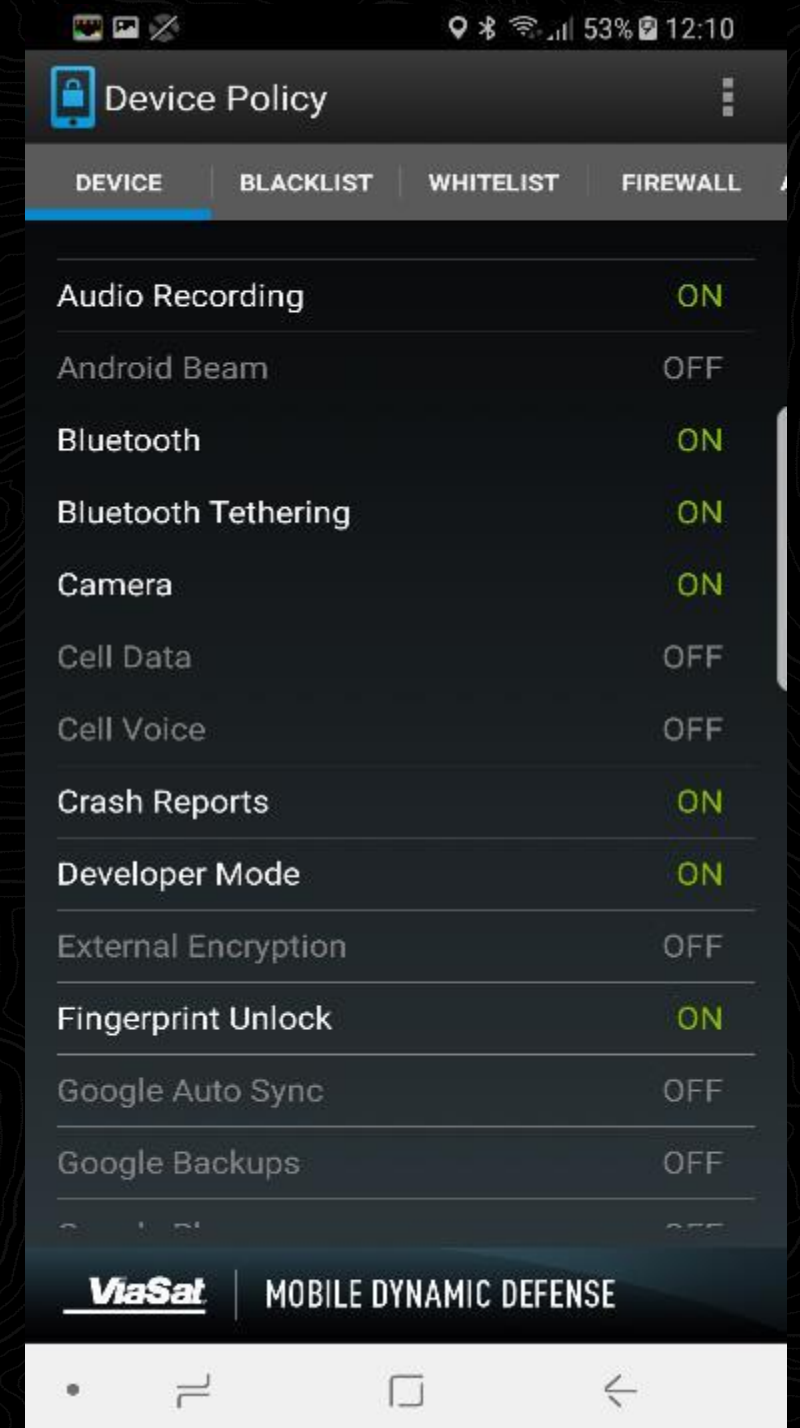
End User Device Ecosystem

- TDL Apps
 - ATRAX – Link 16
 - Mobile JECL – SADL, VMF, Link 16
- Common Operating Picture
 - ATAK/WinTAK
 - APASS/Killswitch
 - Sitaware Edge/Frontline
 - Elbit BMS



Supporting Software

- ViaSat MDD
 - Policy Management
- TAK Server
 - Server/Client Architecture
- ArcGIS Server
 - Mapping Server





Finding the Solutions

- Reduce the size and weight of the radios
- Find common waveforms, bearers, protocols, message formats
- Centralise and standardise power supplies
- Utilise power generation methods – solar, kinetic, fuel cells
- Secure our information end to end – remove single points of failure
- Single source of fused information – COP, single display, HUDs



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Questions?

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References

- <https://charliecompany.org/2013/01/19/what-did-vietnam-soldiers-carry/>
- https://epublications.bond.edu.au/cgi/viewcontent.cgi?article=1004&context=tru_conf
- <https://uklandpower.com/2017/12/13/reducing-the-infantrymans-load/>
- <https://www.aeronix.com/products/idm-vmf-modems/>
- <https://systematic.com/defence/news/2018/product-update-sitaware-frontline-21/>
- <https://militarystockphoto.photoshelter.com/image/I0000sXENKqIkfH0>
- https://en.wikipedia.org/wiki/International_military_intervention_against_ISIL#Multi-national_airstrikes