BDATech and Precision Technic Defence

Completing the Mission Through Adaptable Communications Platforms.

Speakers -

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Precision Technic Defence Pty Ltd

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Field Applications Engineer
Black Diamond Advanced Technology
Scope

Introduction to the two companies

Customers and Programs

Hardware Overview

Secure Tactical End User Device Overview

Software Overview

Capability not Cables
Who we are
BDATech operates from a 24,196 sqft facility in Chandler, AZ

This Facility house all functions of the business, including engineering & design, product testing, product assembly, sales, marketing, and admin
BDATech Overview :: Facility Capabilities & Equipment

Engineering
• Mechanical
  i. Enclosure Design
  ii. Injection Mold Tooling Design

• Electrical
  i. Schematic Capture
  ii. Printed Wire Board layout

• Software
  i. Application
  ii. Embedded

• Human Factors
  i. User-Centered Design
  ii. Research
BDATech Overview :: Facility Capabilities & Equipment

Product Design
• Rapid Development Capabilities
• “Skunk Works”
• In-House Rapid Fabrication
• In-House Injection Molding Capabilities

Product Testing
• Electro Magnetic Capabilities
• Ingress Protection Testing
• Temperature and Humidity Testing
• Vibration and Shock Testing

Product Assembly
• Electro-Mechanical Assembly
• System Level Testing
• Cable Manufacturing
• Rework and Repair Center
PTD Overview :: Who We Are

- Danish Company established in 1985 providing turn-key solution around EO/IR Technology
- In 2009 launched new and enhanced Defence centric structure and Mission Set, founded in the Danish company
- Currently expanding its business to include a new company structure with global presence
- BDATech Partner since 2011, and provider of Turn Key Solutions established around BDATech Solutions, Capabilities and products.
- Established Precision Technic Defence Pty Ltd in Australia in 2017 to provide turn key solutions and services to the Asia Pacific region.
PTD Overview :: Who We Are

• Our **vision** to be best in breed within company scope of work and capabilities

• Our **mission** is to create strong partnerships and relations with customers and partners. Be a trustworthy partner and provider of “tip-of-the-spear” technology and solutions

• Our **values** are Credibility - Quality - Knowledge

• Working with a global reach from Australia to Arctic Region - **Providing Tactical Solutions** for the Modern Warfighter

• Company holds more than a century of Military Experience, vast technological knowledge and a strong network, in particular within Special Operations

• Represents distinct manufactures within the Operational and Tactical Spectrum – Sensor to Operator

• Working through both Direct Sale, Re-seller Network and OEM Partnerships
Customers & Programs
Battlefield Airmen Office (BAO) – Operational Control System (OCS)

- BDATech’s APEx (APS) and Assaulter System was selected in 2015 as the BAO OCS Solution.

United States Special Operations Command (USSOCOM) Field Computing Device – Wearable (FCD-W)

- APS and Assaulter Kit 2016 FCD-W Solution
- Currently being fielded to USSOCOM and Android end users
Customers & Programs :: Europe & Australia

BDATech/PTD has provided equipment for the following customers and programs:

- Digitally Aided Close Air Support (DACAS) Tender for Danish MoD
- DACAS Program for Finnish Defence Forces
- DACAS Capability Delivery to German MoD
- DACAS Capability Delivery to Dutch MoD
- DACAS Capability Delivery to Swedish MoD
- DACAS Capability Delivery to Norwegian MoD
- DACAS Capability Delivery to Canadian Military
- LAND17 as sub-supplier to Rockwell Collins Australia
- DACAS and Dismounted Situational Awareness evaluations to Australian MoD
- DACAS and Dismounted Situational Awareness evaluations to New Zealand MoD
- Danish Dismounted Situational Awareness Program
Why are they using our products?

• Combat Proven Solution! – TRL 9

• Extremely Rugged

• Multi-mission capability

• Ideal Form Factor for JTACs and Operators

• High Quality at an Affordable Price (Lowest Price Technically Acceptable)

• USB 3.0

• Scalability Options
Hardware Overview
APEx Predator System :: The APEx Hub

The APEx Controller:
- USB 3.0 capable
- Can support 4 peripheral cables
- Supports a variety of power options
- Conducts Power Management
- **Combat Proven**
- Scalable with the Assaulter System
APEX Predator System :: JTAC Configuration [Example]
The Assaulter System allows an EUD to connect with multiple peripherals while providing power management

- Provides Power + Data for peripherals
- Supports a Windows or Android EUD
- Distributes power to attached peripherals from a single / common source.

**Combat Proven**

- Uses the same cables as the APEx Predator, allowing for scalability and eases the logistical burden
Assaulter System :: VDL Light Configuration [Variant]
Bare Kit Overview :: Simplicity

The Bare Kit connects a Harris AN/PRC-152/A directly to your Android or Windows End User Device (EUD).

• Provides Power + Data for between radio and EUD

• Recharge the EUD from the radio

• Minimalist design for easy integration
Radio Power Wedge :: Power Management

Wedge connects to the bottom of the radio and has two modes:

• Battery attached: Battery trickle charged for power management
• Battery Removed: For battery elimination mode
• Controlled in APECon
Soundwave :: Push to Talk

The Soundwave connects to support U92/TP120 headset jack connections used on tactical communications headsets, such as the Peltor COMTAC II/III™.

BDATech’s patent pending Soundwave technology counters the audio “Warble” that plagues Operators using power management systems.

3.5MM audio jack allows for audio recording, audio playback, and phone integration.
The APEX and Assaulter Systems can be integrated with Windows and Android devices (laptops, smart phones, tablets).

Common EUD devices are:

• Getac MX-50

• Panasonic FZ-M1 (Win), FZ-B2 (Andr)

• Samsung S5, S6, S7, S8, S8+, Note 3/4

• LG V20, V30, G5, G6

The APEX and Assaulter Systems send and receive Power + Data to the EUD.
Secure Tactical End User Device Overview
TACLAN FCD-W Introduction

• Intro
  – The USSOCOM TACLAN Program designed and built a tactical kit for SOF Operators designed around a first of its kind, fully secure operating system (ROM).
  – The kit is known as Field Computing Device – Wearable (FCD-W)
FCD-W Overview

• **Capabilities**
  – The FCD-W kit provides the individual SOF operator with a system containing
    • Hubs and cables
    • Ruggedized case
    • End User Device (EUD)
    • Software
  – Small, lightweight, wearable and reliable in austere environments
  – Computing and storage for tactical C4I integration and optimized for the dismounted operator use case

• **Kit Configurations**: Base Kit w/ software plus:
  – JTAC Kit
  - or –
  – Standard Operator Kit
FCD-W Kit Configuration

• **Base Kit**
  – Samsung Galaxy S6 – 128GB
  – Juggernaut Case & Mount
  – Black Diamond APEx to Juggernaut Case Charging/Data Cable
  – Black Diamond APEx to USB 3.0 Type-A Male Adapter Cable
  – Capacitive Stylus and Tether

• **Software Baseline**
  – GOTS Apps: ATAK, ATRAX, mobileJECL
  – Black Diamond Apps: Universal KDU, ApeCon
  – Security Apps: ViaSat EDD (MDM), Samsung CCMode
FCD-W JTAC Kit

- **JTAC Kit**
  - Hub
    - APEx Predator 4-port Controller
  - Wedge
    - Wedge, Power, Radio

- **Cables:**
  - **Radio Cables**
    - Radio, AN/PRC-148
    - Radio, AN/PRC-152/152A
    - Radio, PRC-117G, J4-DATA
    - Radio, RT-1922/USB/RS232
    - VDL, TACTICAL Rover-p (SIR)
    - VDL, TACTICAL Rover-e
  - **Peripheral Cables**
    - DAGR
    - PLRF15C/25C, USB Type-A
    - USB3.0 Receptacle
    - EUD Extension Cable
  - **Power Cables**
    - Power, Dual-HH Battery
    - Power, Battery, Dual-5590
    - Power, Dual-LI/CWB Battery
FCD-W JTAC Kit
FCD-W Standard Operator Kit

- **Standard Operator Kit**
  - Hub
    - APEX Assaulter 2-port Controller
  - Wedge
    - Wedge, Power, Radio

- **APEX Assaulter 2-port Controller**

- **Cables:**
  - Radio Cables
    - Radio, AN/PRC-148
    - Radio, AN/PRC-152/152A
  - Peripheral Cable
    - USB3.0 Receptacle
    - EUD Extension Cable
  - Power Cable
    - Power, Dual-HH Battery (Hammerhead)
FCD-W Standard Operator Kit
FCD-W Hub and Spoke Model
FCD-W High Level Operational View
The **FCD-W ROM** is:

- Non-rooted
- Non-neutered
- NIAP Approved
- Common Criteria compliant
- Samsung Signed
- Google CTS Approved
- CSfC Compliant
FCD-W ROM

• How did we do it?
  – The TACLAN Program contracted Samsung to design a ROM that:
    • Did not disable any functionality critical to the tactical use case
    • Added drivers necessary to communicate with all tactical radios and peripherals (including future radios)
    • Removed most Samsung Core Apps
    • Exposed some APIs for additional functionality and security enhancements
      – Feature Examples: Multiple Simultaneous Ethernet / Time from GPS
      – Security Examples: Prevent USB Host Storage / Enable or Disable WiFi or Bluetooth / Blacklisting and whitelisting of apps
FCD-W ROM

• How did we do it?
  – TACLAN contracted Par Government to design an app (Tak Services) that
    • Allows the simultaneous use of multiple Ethernet devices
    • Pulls Time from GPS
FCD-W ROM

• How did we do it?
  – TACLAN selected ViaSat Exede Dynamic Defense (EDD)* as the Mobile Device Management (MDM) solution for FCD-W. It is the ONLY MDM that will maintain the security posture of the EUD in disconnected mode. We collaborated with ViaSat to further develop this product to:
    • Comply with all DISA STIGs and relevant IA controls
    • Knox provision the EUDs with a Knox on-premise server
    • Push mission plan files and the security policy to the EUDs

* Now known as Mobile Dynamic Defense (MDD)
FCD-W ROM
• How did we do it?
  – TACLAN developed the default FCD-W security policy* using EDD to:
    • Disable WiFi, BlueTooth, NFC, Cell and Cell Data.
      – Only comms possible via Ethernet or Serial protocols via the USB port.
    • Blacklist unneeded apps including Google and Samsung Core Apps (Gmail, SPay, etc.)
    • Blacklist packages which disable certain features (E911, Phone Dialer, SMS, etc.)

*All settings in the security policy can be changed either locally on the EUD with an admin password or from the EDD provisioner laptop
FCD-W ROM Features

- FCD-W ROM vs Nett Warrior and other “rooted” ROMs

<table>
<thead>
<tr>
<th>Feature</th>
<th>Nett Warrior</th>
<th>FCD-W</th>
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<tbody>
<tr>
<td>Non-rooted</td>
<td>✗</td>
<td>✔</td>
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<tr>
<td>NIAP Approved</td>
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<td>Samsung Signed</td>
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<tr>
<td>On-the-fly Policy Changes</td>
<td>✗</td>
<td>✔</td>
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<tr>
<td>Simultaneous Ethernet</td>
<td>✗</td>
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FCD-W Testing

• Testing
  – Functional Evaluation
  – Beta ROM test
  – Developmental Test (DT)
  – Operational Utility Assessment (OUA) + Follow-on HHL16 Testing
    • Emerald Warrior and RRE
    • Dare Range
  – A-PASS User Testing

• National Assessment Group Report
  – FCD-W received a passing grade - April 2017
FCD-W Release

- RMF Package completed December 2016
- ATO granted January 2017, updated September 2017
- Conditional Fielding and Deployment Release (CF&DR) granted June 2017
- All kits fielded by 30 September 2017
DoD Collaboration / DoD “Common” ROM

• Industry has taken notice
  – Nett Warrior and the Battlefield Airman Office (BAO) wants what we have
    • Tech sharing day in Dec resulted in agreement between TACLAN and PEO-Soldier to collaborate on a DoD “Common” ROM
      – Intent is to reduce cost and time to deliver
    • BAO got wind and is now driving the effort
      – Galaxy S7 and Getac MX-50 under consideration
    • Round-robin scheme – next program up develops the next ROM

– NATO partner nations interested
EUD/ROM Availability

• What’s available today?
  – Samsung Galaxy S6 with TACLAN FCD-W ROM
    • Out of Stock
    • USSOCOM TACLAN Program Office not able to accommodate large FMS orders
  – Samsung Galaxy S7 with Knox Mission Bundle ROM
    • Built and sold by Samsung Data Systems America (SDSA)
    • Ported the same requirements used to build the FCD-W S6
    • Removed Cellular
    • Legal hurdles pending

• What’s available Near Term?
  – Getac MX50 (December 2017)
    • Same requirements used to design the TACLAN FCD-W S6
    • Cellular “snap back” required (NOT NIAP validated)
EUD/ROM Availability

• Future Possibilities?
  – Current discussions ongoing to add same tactical functionality into the commercial versions of Samsung Galaxy and Note lines.
    • Off-the-Shelf acquisition possible anywhere in the world
    • Will be NIAP-ready on release date
    • License key will unlock drivers/features/API’s/etc.
    • ViaSat MDD will integrate into this commercial model
  – Samsung may create a “portable” tactical ROM
    • Eliminates the requirement that each program office contract development of their own ROM
    • Portable to future products with minor updates to accommodate chipset architecture updates
  – Panasonic FZ-X1 to be put through NIAP
    • Expected to be ready Q3 2018
The State of Tactical Kits and EUDs

• General comments
  • The concept of the usefulness of mobility is at least two years behind in the thought process with our international partners. They don't know what they don't know.
  • As they're being exposed to FCD-W and EDD, they're beginning to realize that they can have the full functionality of the device and all the security required to get an ATO.
  • Up until now, systems integrators have wanted to use Nett Warrior because it's a finished solution and that's all they know about. Some units have also been building their own rooted EUDs.
  • There is a lot of excitement about FCD-W and EDD because it solves their security concerns and offers flexibility that they don't have with Nett Warrior.
Software Overview
FAC-US :: Overview

Forward Air Control – Utility Suite (FAC-US) is a K-Series (VMF), CoT, and J-Series (SADL & Link-16) capable digitally aided Joint Fires Software. FAC-US is made up of two different Combat Proven software applications:

- FAC – Utility (FAC-U), designed for dismounted Joint Fires operations.
- FAC – Message Emulator (FAC-ME), designed to make any aircraft DACAS capable, train JTACs, and mobile C2.
APECon :: Overview

APECon allows the user to:

- Enable/Disable power to ports
- Power On/Off devices
- Check battery status
- Control Wedge
Universal Remote KDU :: Overview

Universal Remote KDU allow you to view, control, and manipulate your:

• PRC-148/JEM
• PRC-152/A
• PRC-117G
What is the Innovation? :: What do we do differently

- Technology built on an open architecture.
- Scalable to suit a wide range of roles, missions and environments.
- Solution for every mission set regardless of radio, end user device, application or battery.
- Ability to integrate any receiver, transmitter, software, display or power source.
- Customer designs the system, we deliver the product.
- One screen to rule them all.
- Producing the effect you want to achieve on the battlefield.
Capability not Cables :: It’s your effect not ours.

- Cables and hubs form the backbone not the capability.
- Hardware enhanced with software for command and control, battlefield management, video display and power monitoring.
- Linking of different messaging formats into one platform. Link 16, VMF, CoT.
- Scalable from dismounted to vehicle to command post.
- Major systems delivered with software, integration with other systems, training, advice, and support.
- Enhance with cyber security solutions such as ViaSat MDD.
- Secure your end to end communications with CSFC solutions such as Secure Wireless CP from PacStar Communications.
- Purchase a solution to fill your capability gap don’t purchase equipment and create the gap.
Build your network :: Growing your network in the field

• Provide every soldier access real time data.
• Expand the soldier dismounted solution to the rest of the network.
• Using common architecture to fit out vehicles, command posts and installations.
• Create secure network bubbles in the field using commercial wireless secure networks.
• Protect your data and soldiers with the right levels of access and security.
Questions?

We welcome you to come talk to us more at Stand 50a in the main hall.

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