TOUGH STUMP RODEO
11-13 JUNE 2024
Overview

TOUGH STUMP
TECHNOLOGIES

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Executive Summary

Overview: Tough Stump Rodeo 2024 was a challenging technology demonstration aimed at showcasing the advanced capabilities of various vendor technologies across a series of demanding scenarios. The event was designed to simulate real-world conditions, allowing vendors to exhibit their cutting-edge solutions and effectiveness in operational settings. Samsung provided the smartphones, tablets and displays utilized for the field exercises, command and control and remote viewing.

Scenarios: The demonstration featured four distinct scenarios, each presenting unique challenges:

1.Mineshaft Operation: Simulated a subterranean environment requiring advanced mapping and situational analysis.

2.Search and Rescue (SAR) Simulation: Tested the capability to locate lost individuals in multiple "last known" locations.

3.Cabin Surveillance: Focused on remote monitoring and data collection of a target cabin.

4.Disaster Relief Coordination: Emphasized damage assessment and relief operations using ARTEMIS photogrammetry and other technologies.

Vendor Collaboration: Participating vendors integrated their technologies to ensure mission success, demonstrating their ability to deliver effective solutions for end users operating in high-risk environments. The collaborative effort showcased the potential of these technologies to enhance operational effectiveness and safety.

Tough Stump Rodeo '24
11-13 June, 2024

Description:
The TOUGH STUMP RODEO (TSR) scenarios took place in the austere, mountainous backcountry of Montana, where each participant used ATAK for data passing and viewing. Due to the rugged terrain, there was no cell coverage whatsoever. On Day 1, the event was segmented into four simultaneous scenarios, each presenting distinct challenges for vendors to tackle. Participants who embraced the challenge of the Rodeo set up and engaged in ad hoc MANET/MESH radio networks for streaming all data.

For the first time in TSR history, the rodeo was live via TAK in 15 countries, 29 different states with over 37 TAK servers federated reaching a total of 500 viewers.

Presented By:

TAK U

In Partnership With:

SAMSUNG

Sponsored By:

ditto

PAR GOVERNMENT

RED CAT

GALVION

iGOV

goTenna

KÄGWERKS

NEVER A FAIR FIGHT

SAFRAN OPTICS 1

HEXAGON US FEDERAL

TELEDYNE FLIR

Mine Shaft (Sub-T/DOD, FEDs, State, & Local)

In the first scenario, set in a mineshaft, the task involved addressing a complex subterranean problem. The objective was to develop a 3D model of the "enemy location" using LiDAR technology. Teams were required to gather a range of sensor data—including thermal, electro-optical/infrared (EO/IR) readings, photographs, and live-streams from small unmanned aerial systems (sUAS)—and transmit this data over 35 miles to the Operations Center using ADHOC MANET/MESH radio networks. Throughout all scenarios, the Advanced Tactical Awareness Kit (ATAK) served as the Common Operating Picture (COP), while ATOS tags provided real-time situational awareness to the Ops Center.

- **Trellisware** – *Mobile ad-hoc network (MANET) radios that relay voice, data & video traffic*
- **Boston Dynamics** - *Robot dog equipped with advanced mobility enabling automation in unstructured or hard-to-traverse spaces*
- **Brinc Drones** - *GPS denied position-hold drones with real-time object awareness, floor-plan creation, dynamic speed adjustment capabilities*
- **HoverFly** - *Tethered, long-duration, all-weather drone*
- **HexFed** - *Advanced LiDAR capability that captures, analyzes and presents spatial data*
- **ATOS tags** - *GPS tracking system that organically plugs into TAK with goTenna*
- **goTenna** - *ATAK Backbone* via Mesh network and extended range capabilities

Area SAR (Lost hiker/More local civilian community &/Wild land FFs)

The second scenario involved a simulated Search and Rescue (SAR) operation to locate lost hikers across several "last known" locations. The goal was to transmit all situational data—including thermal, electro-optical/infrared (EO/IR), short-wave infrared (SWIR) imagery, photographs, and live-streams from small unmanned aerial systems (sUAS)—along with Personal Location Information (PLI) over a 35-mile distance using ADHOC MANET/MESH radios. The Operations Center was responsible for tracking, plotting, and analyzing this data using ATAK to ensure effective management and coordination of the search effort.

- **Silvus** - *Mobile ad-hoc network (MANET) radios that relay voice, data & video traffic*
- **Red Cat (Teal Drones)** - *American-made video and data streaming drones*
- **HoverFly** - *Tethered, long-duration, all-weather drone*
- **ATOS tags** - *GPS tracking system that organically plugs into TAK with*
- **goTenna** - ATAK Backbone via Mesh network and extended range capabilities

Cabin (DOD, FEDs, State, & Local)

The third scenario involved remotely monitoring a target cabin using a combination of thermal imaging, LiDAR, electro-optical/infrared (EO/IR), short-wave infrared (SWIR) technologies, photographs, and live-streams from small unmanned aerial systems (sUAS). The collected data was then transmitted over a distance of 35 miles to the Operations Center for real-time analysis and assessment.

- **DOMO Tactical Communications -** *Mobile ad-hoc network (MANET) radios that relay voice, data & video traffic*
- **Ghost Robotics -** *Agile and durable all-weather ground drone for use in a broad range of unstructured urban and natural environments*
- **ATOS tags** - *GPS tracking system that organically plugs into TAK with goTenna*
- **goTenna** - *ATAK Backbone* via Mesh network and extended range capabilities

Disaster Relief Area (ARTEMIS Ortho/DOD, FEDs, State, & Local)

In the fourth scenario, the ARTEMIS system was used to provide detailed photogrammetry, which teams were required to transmit via ADHOC MANET/MESH radio networks. Along with this, they also sent thermal, electro-optical/infrared (EO/IR), short-wave infrared (SWIR) data, and both still and live-stream feeds from small unmanned aerial systems (sUAS) over a distance of 35 miles to the Operations Center. The Incident Commander (IC) used these initial damage assessments to prioritize and direct relief response teams to the most critical areas. With ATAK displaying all this information, the IC was equipped with comprehensive tools to effectively track, redirect, and manage relief efforts.

- **Persistent Systems** - *Mobile ad-hoc network (MANET) radios that relay voice, data & video traffic*
- **eBee TAC** - *Fixed-wing tactical mapping drone that helps users in remote environments collect data for situational awareness*
- **Skydio drone** - *Autonomous, high-resolution drones with AI capabilities*
- **SafanOptics1**- *State-of-the-art electro-optical devices, sights, modules, navigation, etc.*
- **ATOS tags** - *GPS tracking system that organically plugs into TAK with goTenna*
- **goTenna** - *ATAK Backbone* via Mesh network and extended range capabilities

Operations Center

The Ops Center was designed to efficiently manage TAK server connections, which supported over 350 users simultaneously from 29 states, 15 countries, and 37 server federations. Remote participation was facilitated globally by enabling observers to join the event through TAK, utilizing various data packages including CoT (Cursor on Target), BFT (ATOS GPS tags), and FMV (Full Motion Video) feeds from the Rodeo in Montana.

- **ParGov** - *Server/ATAK support & lead developer of WinTAK & TAK*
- **iGov** – *ATAK Server/Backhaul up & out via secure, specialized integration systems*
- **Samsung** - *Audio/video/ATAK phone support and devices*
- ***Ditto Live** - *Enables cross-platform, dis-similar wave forms to talk via streamlined process*
- **REDCOM** - *Enables dis-similar wave forms to talk with secure and reliable communications technology*
- **Glenair Cables** - *High-reliability cables and connectors for mission-critical land, sea, air, and space applications.*
- **Kagwerks** - *Rugged, tactical operator-worn communications technologies with cutting edge computing capabilities*
- **Doodle Labs** - *Mobile ad-hoc network (MANET) radios that relay voice, data & video traffic*
- **Juggernaut Case** - *Phone/Tablet ruggedized protective cases & mounts*
- **Galvion** - *Dynamic energy management providing power for long duration missions*
- **Lifelens Tech** - *Medical Biometrics & pioneering innovative devices for personal health monitoring*
- **Onyx Aero** - *Equipment holders for 1st Responder/DOD*
- **Sentien Robotics** - *Create & implement "Hive" UAS capabilities for drone fleets*
- **Viasat Inc** - *In-line encryption & unlimited high-speed satellite internet*

*Best Vendor Award Recipient

Vendor Directory

Sponsor Vendors

Other Vendors

Partner Vendor

Samsung

Website:
https://www.samsung.com/us/business/solutions/industries/government
Sales / BD Contact: Todd Maxwell – Mobile Solutions & Shane Hobgood – Display Solutions
Email: t.maxwell@sea.samsung.com & s.hobgood@sea.samsung.com
Phone: 1-202-770-8352 & 1-657-600-5547
Samsung Galaxy Connected Ecosystem:

- **Samsung Smartphones & Wearables - S24, XCover 6 Pro, S23 Tactical Edition, Galaxy Watch:** From special operations to coordinate multi-agency responses, Samsung's innovative devices feature **highly accurate GPS chipsets** to support ATAK's real-time mapping of operational areas, personnel and assets involved in the mission. The **open and secure Samsung platform** and Android OS allow for seamless and secure file sharing and communication of mission data through ATAK using LTE, LMRs, Tactical Radio Networks and satellites. **Samsung** has a lengthy heritage in the ATAK development community supporting plug-in development for drones, wearables and other sensors and feature enhancements to our end points. Samsung offers end point options to support your mission from our flagship S24 with best in class processors and GPS chipsets to our rugged XCover6 Pro smartphone to Galaxy Watch wearables with ATAK plug-ins. In addition, the Samsung Tactical Edition portfolio of devices provides the durability, functionality, processing power and security required for precision military operations with our S23 and XCover6 Pro editions.
- **Samsung Tablets - Galaxy Tab Active5 and Tab Active4 Pro:** Give your frontline team a tablet that's more than up for the job with **Galaxy Tab Active's**. These Tablets help your crew do more with less while staying productive on-site or in the truck — perfect for field workers and industries like delivery services, warehouses, and law enforcement. A durable and water-resistant design withstands drops, spills and tough heat and cold. The responsive touchscreen makes it easy to knock out tasks — it even works if you're wearing gloves or with water on it. Keep the workflow going with a long-lasting battery that's also replaceable — simply swap it for a fresh battery and continue on.

Sponsor Vendors

Samsung Cont.

- **Drone Control:** Samsung has been trusted as the drone controller end point for the most used UAS systems because of industry leading features, TAA compliant options and custom software configurations options.
- **Command & Control -** Government agencies are increasingly adding video walls and high-resolution monitors to their command and control centers, the information hubs of emergency response teams. Where safety and security are paramount, lifelike color and heightened clarity aren't just nice to have; they can improve rescue and response times in a crisis. Control rooms rely on accurate and uninterrupted visuals to monitor crisis situations, dispatch response teams and coordinate those teams' efforts. These hubs also organize critical ongoing activities such as air traffic and manufacturing. In applications like military and homeland security, command centers enable tactical operations and threat assessment. Law enforcement and public safety agencies also frequently use command and control centers for security and surveillance. Having high-functioning, efficient control rooms is critical to their operations' success and the safety of the population at large — and that's where Samsung displays, can make a world of difference.

Ditto Live *BEST VENDOR AWARDEES*

Website: https://ditto.live
Sales / BD Contact: Mike Herman
Email: mike@ditto.live
Phone: 301-910-1255
Products Summary:
The Ditto Edge Sync ATAK plugin enhances situational awareness and communication for tactical teams by enabling automatic peer-to-peer data synchronization across various transports such as Bluetooth Low Energy, Wi-Fi Aware, MANET, and SATCOM, without relying on a central server. It ensures a consistent Common Operating Picture (CoP) in challenging connectivity environments by enabling long-distance multihop sync, store and forward, and auto PACE features. The plugin is platform-agnostic, fully encrypted, and seamlessly integrates with ATAK, allowing for flexible and reliable data sharing at the edge.

Sponsor Vendors

PAR Government

Website: https://pargovernment.com
Sales / BD Contact: Chad Wiley
Email: Chad_Wiley@partech.com
Phone: 615-879-3201
Products Summary:
The Tough Stump Technologies Rodeo 2024 in Montana went beyond hearing about how well a product works, to seeing it up close and in-person. The Tough Stump Rodeo fosters in-depth conversations between customers and vendors, enabling users to take the tech for a test drive from the tactical edge. The Tough Stump Rodeo showcased the cutting-edge capabilities from many vendors, which included PAR Government's Sit(x) TAK Service as a Service and GvStreamer Video Server solution as key components for the success of the Rodeo. These technologies were pivotal in maintaining robust TAK server connections for vendors, participants, and remote observers, demonstrating exceptional situational awareness and real-time data sharing across the globe.

Galvion

Website: www.galvion.com
Sales / BD Contact: Christopher Barb
Email: Chris.barb@galvion-usa.com
Phone: 757-769-5214
Products Summary:
Our product line demonstrated power and data in austere locations, scavenging from what was around. solar/ dc/ any ac source.

Sponsor Vendors

goTenna

Website: www.gotennapro.com
Sales / BD Contact: Cyrus Wilson - VP, Defense Sales
Email: Prosales@gotenna.com
Phone: 910-916-7930
Products Summary:
goTenna demonstrated our market leading Pro X2 mobile mesh solution along with a network comprised of remote deployed EdgeRelay units. goTenna created a narrowband mesh network in the austere environment covering over 450 sq/mi of coverage for TAK PLI and messaging throughout the ToughStump AO. goTenna also demonstrated our innovative SkyWave solution which offered TAK PLI and messaging backhaul using HF from the Ops Center over 1800 miles to a C2 location in Virginia.

iGov

Website: https://igov.com
Sales / BD Contact: Paul Butcher
Email: pbutcher@igov.com
Products Summary:
ATAK Server/Backhaul up & out via secure, specialized integration systems

KagWerks

Website: https://kagwerks.com/contact-us
Sales / BD Contact: Brian Ellis
Email: brian@kagwerks.com
Phone: 971-660-3404
Products Summary:
Kägwerks designs and develops rugged, tactical operator-worn communications technologies that enable unmatched connectivity and integrated secure networking for the individual warfighter.

Sponsor Vendors

Red Cat Holdings (Teal Drones)

Website: https://redcat.red
Sales / BD Contact: Mike Paulson
Email: mike.paulson@redcat.red
Products Summary:
The Blue UAS Certified, military-grade Teal 2 sUAS is designed, built, and serviced in the USA and supports defense, public safety, and commercial operations in challenging environments.

Hexagon US Federal

Website: https://hexagonusfederal.com
Sales / BD Contact: Elliott Ferguson
Email: Elliott.ferguson@hexagonusfederal.com
Phone: 571-524-8173
Products Summary:
Hexagon US Federal collaborated with Boston Dynamics, Doodle Labs and Trellisware to build out an Augmented Reality experience and push the view to the Operations Center via radio. Our BLKARC lidar scanner was integrated with Boston Dynamics SPOT to autonomously capture a 3D representation of the mine shaft. The collected 3D model was opened in Hexagon's Augmented Reality solution (Immersal) enabling an operator to see the extent of the whole mine and all the twists and turns from anywhere in the mine. We then attempted to transmit this view to the Operations Center.

Sanfran Optics 1

Website: https://www.optics1.com
Sales / BD Contact: Tim Brauch
Email: tim.brauch@optics1.com
Phone: 617-784-7477
Products Summary:
(HRTV/ ROS3) High Resolution Thermal Viewer & Tripod Remote Operating System / **(SATIS XLR)** Advance long Range cooled Thermal Imager / **(E-COTI)** Enhanced Clip on Thermal Imager / **(PLRF25C BLE X3)** Pocket Laser Range Finder / **(LROI-COIL)** Long Range Optical Interrupter/ Compact Ocular Interrupter Laser

Vendor Directory

Boston Dynamics

Website: https://bostondynamics.com
Sales / BD Contact: Shaun Ray
Email: sray@bostondynamics.com
Phone: 757-285-8132
Products Summary:
The equipment that was brought to TSR24 was two of our all-terrain quadruped robots called "Spot". The first robot, which was used in the Mine Shaft Lane, was equipped with PTZ / 360 degree visual cameras, a thermal camera, 2-way audio, a flashlight, a BLK ARC SLAM-based lidar scanner to create a 3D point cloud of the mine shaft, and Trellisware mesh radios for communication back to the handheld controller and back to the Ops Center. The second robot was the same base robot as the Mine Shaft robot, but instead of having the lidar scanner and Trellisware radios, it had a 6DOF, fully integrated arm with a manipulation gripper and Persistent System mesh radios. The first robot was showcasing the application of tunnel mapping while the second robot was showcasing the application of tactical entry / situational awareness.

BRINC Drones

Website: https://brincdrones.com
Sales / BD Contact: Andrew Coté
Email: andrew.cote@brincdrones.com
Phone: 703-996-9661
Products Summary:
BRINC Drones creates products for high-risk situations, serving approximately 700 customers in the U.S. with thousands of units shipped. Their main products include the Lemur2, an indoor tactical drone ideal for GPS-denied environments and critical operations like hostage situations, and the Responder, the first automated response drone designed for rapid deployment and patrol augmentation. Both drones offer advanced features such as two-way audio/visual capability, LIDAR navigation, and rapid deployment capabilities. Please allow us to demo these groundbreaking solutions for your team.

Vendor Directory

Domo Tactical Communications (DTC)

Website: www.domotactical.com
Sales / BD Contact: Chris Nigon
Email: Chris.nigon@domotactical.com
Phone: 703-581-5314
Products Summary:
DTC demonstrated its tactical MESH radio capabilities which included associated accessories to support voice, data, network extension. We also partnered with our HF reseller NViS (on site supporting a demo with GoTenna) to remotely manage HF radios (and if necessary, transmit data from HF) via our MESH network technology.

Doodle Labs

Website: https://doodlelabs.com/
Sales / BD Contact: Dominic DeMarco, Sr Sales Engineer
Email: dominic.demarco@doodlelabs.com
Products Summary:
Doodle Labs designs and manufactures low-cost, low-SWaP, and highly capable radios for off-the-grid connectivity and network extension. We have several drone partners that are Blue UAS certified, due to our NDAA compliant hardware. The Mesh Rider radio waveform enables robust, long-range, and high-throughput communication, ideal for challenging environments for unmanned systems and connected teams environments. Our Multiband Wearable Mesh Rider Radios are easily integrable with ATAK and can connect to End-User Devices (EUDs), providing dynamic, self-healing mesh networks for defense, public safety, and industrial applications.

What we did at Tough Stump Rodeo:
Demo 1: we showcased our licensed anti-jam feature, Sense. We first demonstrated how a drone using a single-band frequency could be easily jammed. Then, with the Sense license activated, the drone automatically switched to a cleaner channel within milliseconds, maintaining command, control, and video link, ensuring the mission continued uninterrupted.

Vendor Directory

In Demo 2: In collaboration with Hexagon Federal and Immersal, we showcased their augmented reality by relaying real-time 3D mapping and X-ray vision of a building using the Mesh Rider radios to share live video to the TOC.

Demo 3: We maintained air to ground communications up to 4 kilometers with a Paramotor pilot (Paul Butcher of IGOV), passing voice comms, GPS, and seamless video using ATAK. We also had video feed viewable from a Teal protoype drone that was provided throughout the network. This demonstrated the capability of Mesh Rider radios in establishing reliable off-the-grid communications, supporting situational awareness from air to ground.

Eolian VR, INC

Website: https://eolianvr.com
Sales / BD Contact: Tim Yandel
Email: tim@eolianvr.com
Products Summary:
Enhanced Command & Control (C2), Mission Planning, & Situational Awareness at the Edge.

Everywhere Communications, INC

Website: https://everywherecomms.com
Sales / BD Contact: Jake Bailey
Email: jake.bailey@everywherecomms.com
Products Summary:
The **EVERYWHERE Mobile App**, the **inReach® by Garmin®,** and the **EVERYWHERE Hub** combine to deliver a global incident command system, location monitoring, and secure messaging, These vital communication links improve team connectivity and productivity, while supporting worldwide worker safety and duty of care.

Vendor Directory

Ghost Robotics

Website: https://www.ghostrobotics.io
Sales / BD Contact: Steve Hilke (SOCOM)
Email: shilke@ghostrobotics.io or sales@ghostrobotics.io
Phone: 910-309-1995
Products Summary:
Ghost Robotics presented the V60 QUGV which is our flagship platform. The V60 integrated with DOMO Tactical Communications through ATAK over Silvus radios. Ghost was also able to integrate with additional communications platforms demonstrating our ability to remain versatile for any end user.

Glenair

Website: www.glenair.com
Sales / BD Contact: Justin Fuchs
Email: jfuchs@glenair.com
Phone: 315-630-9519
Products Summary:
USB power and data management hubs running TAK server as well as multiple radio side adapters and power adapters

Hoverfly Technologies, Inc.

Website: Hoverflytech.com
Sales / BD Contact: John Amick
Email: john.amick@hoverflytech.com
Phone: 757-619-4674
Products Summary:
Hoverfly Sentry Tethered UAS with Trellisware 950 was flown from the entrance of the mine training area for extended LOS communications. Simultaneously another Sentry was also flown at the Sear & Rescue training area for MSS TAK backhaul over 31 miles. The Hoverfly Spectre with Heavy Lift (HL) capability was showcased at the Lodge Operations Center through out the event.

Vendor Directory

Immersal

Website: https://immersal.com
Sales / BD Contact: Sam Poole
Email: sam.poole@immersal.com
Products Summary:
The Immersal SDK lets you map large, real-world spaces and then augment them with digital content. These environments and scenarios can then be experienced by anyone on an AR-capable mobile device or with glasses.

Juggernaut.Case

Website: www.JuggCase.com
Sales / BD Contact: Chris Stalzer
Email: info@juggcase.com
Phone: 480-948-3700
Products Summary:
We provided OPRTR and ADVNTR cases for the Samsung S23TE and XCover 6 Pro devices used during the week with TAK. Also showcased the new VELOX ecosystem along with several other new cases including the new Tab Active 5 TE Tablet OPRTR

Lifelens Technologies Inc.

Website: www.lifelenstech.com
Sales / BD Contact: Kevin Carpenter
Email: www.lifelenstech.com/militaryinforequest
Phone: 445-245-4410
Products Summary:
Micro sensors with FDA cleared EKG/SPO2 Physiological and Environmental monitoring pre and post injury. A Sensor fusion platform that sends real time data i.e. core body temperature, SPO2, EKG, blast, and TBI recognition.

Vendor Directory

NVIS Communications, LLC/CODAN

Website: https://nviscommunications.com
Sales / BD Contact: John Rosica
Email: john@nviscom.com
Phone: 408-712-0084
Products Summary:
We were there together with GoTenna to use the joint venture product of GoTenna/HF/Skywave, we setup an HF node using CODAN Sentry 6120 HF with Tactical Mast/Dipole connected to the GoTenna MESH network setup in the Canyon running ATAK on all endpoint devices. We were able to gather all the COT/PLI info and every 4 minutes link via HF on 3G ALE to station in Southern Virginia and push/pull all COT and PLI so that it could be displayed on large TAK Map in Virginia, and we could see any COT/PLI from Virginia in Montana. This system demonstrated the ease of transfer of all of this ATAK data plus Chat over an HF long haul or short haul distance/circuit.

Onyx Aerospace

Website: plusgear.com
Sales / BD Contact: William Roberts
Email: See Plusgear.com
Phone: 256-469-8626
Products Summary:
Military Universal Radio Holder, ATOS Command Link Holder, ATOS beacon mounts, FPV controller cradle are 3D printed solutions that can be quickly customized to end user needs enabling rapid integration in the field

Vendor Directory

Persistent Systems

Website: www.persistentsystems.com
Sales / BD Contact: Derek Clayton
Email: dclayton@persistentsystems.com
Phone: 646-540-8401
Products Summary:
Persistent Systems showcased both the MPU5 radio and our C band sector antenna to close long distance data links. The team also demonstrated our AWS One Touch Cloud Relay BLOS solution enabling a user to create a BLOS connection to disparate MANET networks worldwide within minutes using any internet gateway available to the customer.

REDCOM Laboratories, Inc.

Website: www.redcom.com
Sales / BD Contact: Jason Ragan
Email: jason.ragan@redcom.com
Phone: 919-352-5671
Products Summary:
REDCOM Sigma XRI-400 consists of small form factor C2 platforms designed for all echelons of the tactical environment. Sigma XRI delivers voice, video, chat, and Radio over IP (RoIP) in a single ruggedized, low-SWaP box. Sigma XRI bridges the gap between disparate radio systems used by military units, government agencies, and public safety organizations. By leveraging existing radio assets, Sigma XRI enables these organizations to seamlessly connect to each other, regardless of radio network, endpoint, or frequency used.

Sensors & Signals, LLC

Website: https://www.snstac.com
Sales / BD Contact: Greg Albrecht
Email: gba@snstac.com
Phone: 415-598-8226
Products Summary:
Sensors & Signals provides rapid technology development for users in austere, denied and challenging operational environments.

Vendor Directory

Sentien Robotics

Website: https://www.sentien.com
Sales / BD Contact: Michael Quiroga
Email: michael@sentienrobotics.com
Phone: 305-496-3667
Products Summary:
Sentien Robotics Demonstrated SHEPARD, a platform-agnostic, centralized fleet controller, and the Hive Expedition, a mobile aircraft launch and recovery system for group 1 UAS. The Hive Expedition can hold up to 12 drones (of multiple makes, models, and capabilities) and fits on the back of an MRZR or pickup truck. This allows a single operator to control UAS fleets with the push of a button.

Silvus Technologies

Website: https://silvustechnologies.com
Sales / BD Contact: Greg Dunbar
Email: greg.Dunbar@silvustechnologies.com
Phone: 310-429-2676
Products Summary:
Silvus Technologies used a combination of our SC4400 and SC4200 radios to complete the links from the search and rescue scenario and provide video from the Teal Drone and Tomahawk Robotics to the command post. We were also able to showcase our WAN connectivity through our VPN to communicate to other users over PTT in three different states. Silvus included a demonstration of our ROIP to Motorola capability and a demonstration of our new MOHOC RTS camera that is powered off of the silvus radio using a single cable for power and data.

Vendor Directory

Skydio

Website: https://www.skydio.com/
Sales / BD Contact: Tom McGrath
Email: tom.mcgrath@skydio.com
Products Summary:
Skydio brought a team with multiple Skydio X10 quadcopters to conduct hands-on flying with TSR24 attendees as well as technology demonstrations and collaboration with Persistent Systems during the Disaster Area lane scenario. Technical demonstrations included the Skydio Team showing various controllers, ATAK/WINTAK integration, Eolian ARTAK and photogrammetry post-processed data products, and onsite collaboration with PAR Gov, Kagwerks, and Starlink. The collaboration with Persistent Systems allowed video to broadcast over the TSR24 PAR Gov SitX server to the greater TSR24 network across the country.

TrellisWare Technologies

Website: https://www.trellisware.com
Sales / BD Contact: Justin Acosta
Email: jacosta@trellisware.com
Products Summary:
TrellisWare Technologies collaborated on a demo with BRINC and Boston Dynamics. In collaboration with Boston Dynamics, telemetry and video were relayed from SPOT to the operator over the TSM® network, using TW Ghost 875 and TW Shadow 950. The TrellisWare team also worked with Ditto to demonstrate that their application could use the TrellisWare network as a transport, allowing for resilient messaging and file transfers between End User devices running their ATAK Plugin.

Vendor Directory

Viasat

Website: https://www.viasat.com/defense
Sales / BD Contact: Victor Sanchez
Email: victor.sanchez@viasat.com
Phone: 760-518-2631
Products Summary:
Viasat collaborated with the industry regarding the concept of a tactical Type-1 Non-CCI encryptor at the tactical edge. The Advance Crypto Unit, ACU, demonstration consisted of a prototype external encryptor small enough to be body-worn or embedded in various Mission Partner or Small UAS Con-Ops, enabling up to SECRET using Type 1 Suite B Non-CCI encryption. Those wanting to continue the dialogue are welcome to reach out for additional information.