

ARTICLES OF COLLABORATION AND MEMBERSHIP APPLICATION

BORDER SECURITY TECHNOLOGY CONSORTIUM (BSTC)

TRABUS Overview

TRABUS, dba Trabus Technologies, is a minority-owned, Service-Disabled Veteran-Owned Small Business (SDVOSB), headquartered in San Diego, California. Incorporated in 2010, TRABUS provides professional support services to the U.S. government and specializes in the development of technical solutions across three major portfolios: Wireless Technologies, Artificial Intelligence, and Cybersecurity. The majority of the TRABUS workforce consists of scientists, engineers, military veterans, and a diverse professional workforce. Many of our employees hold graduate and doctoral degrees from some of the highest-ranked schools in the country and 80% of them hold relevant certifications in their respective fields/disciplines.

Wireless Technologies

TRABUS provides full spectrum signal processing services including transmission, reception and signals analysis. Our expertise lies in signal detection, modeling and estimation; signal analysis and classification; analog-to-digital conversion techniques and performance evaluation; and advanced signal processing algorithms, including novel techniques to support low signal-to-noise ratio environments. Our vulnerability analysis services in the telecommunications domain include hardware and software. This includes analysis of cellular air interfaces and control messaging protocols, embedded cellular user equipment hardware architectures and processors (ARM, DSP, etc.) for all major handset OEMs products. We leverage multiple-antenna performance techniques such as beam forming, null steering, MIMO and a patent-pending Interference Alignment method for data communications to design peer-to-peer radio networks and mobile ad-hoc wireless networks that operate in environments with little infrastructure and high levels of interference.

Artificial Intelligence

TRABUS uses predictive analytics, resource optimization and enhanced signal processing to develop AI-enabled capabilities that will increase the affordability, effectiveness, speed and safety of doing business and conducting operations. TRABUS created an AI-enabled capability that collects and analyzes relevant navigation information to generate better navigation predictions, forecast river traffic congestion and optimize tow configurations—all improving the voyage planning process that transports our nation's commodities throughout the U.S. inland waterways. TRABUS engineers also use enhanced detection of frequency hopped signals; real-time image enhancement through multi-frame blind deconvolution; and enhanced detection of unknown wideband signals to improve signal processing.

Cybersecurity Technologies

TRABUS provides systems security engineering support, Cross Domain Solutions (CDS), Assessment and Authorization (A&A), and cyber experimentation and demonstration. TRABUS has a comprehensive offering across the entire cross domain lifecycle and can provide the products and services needed to ensure our customers operate successfully in today's data-fusion-intense environment. TRABUS uses machine learning to develop cyber-related predictive analytic technologies to evaluate IoT vulnerabilities and preemptively predict suspicions or potentially malicious adversarial activities.