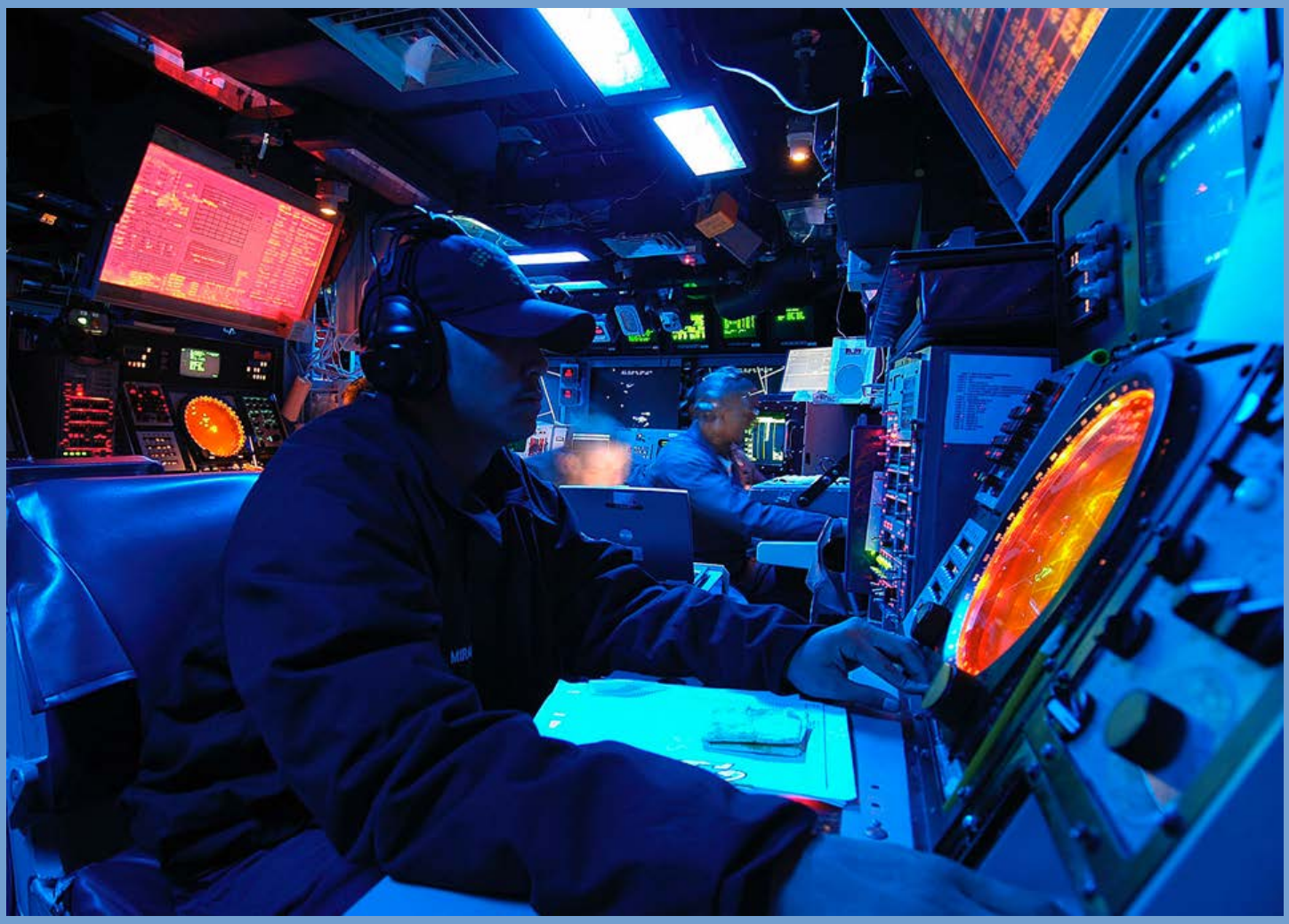

Lakota technical solutions, inc.

CONTACT
J. Robert Pence
President
Lakota Technical Solutions, Inc.
rob.pence@lakota-tsi.com

Leadership Statement

Lakota Technical Solutions, Inc. (Lakota) develops cutting edge solutions and capabilities that allow the U.S. military to maintain information dominance on the battlefield. Lakota's niche product/applications area include applying engineering expertise in real-time software development, military tactical applications and combat system design and integration, simulation systems, sensor and information fusion and human computer interface (HCI) design and development. Understanding that "stove-pipe" solutions are unable to address the complex problems our customers face, Lakota focuses on a holistic approach to product development in order to provide "total system" solutions. This "total system" solutions approach has resulted in a proven track record of providing quality products and services to multiple United States government agencies, contractors, and commercial businesses.

As a customer focused company, Lakota aims to consistently surpass our clients' expectations. Our efforts to attain customer loyalty continue our commitment to develop new products using the latest software development practices and open standards. Likewise, we believe in our employees, whose diverse talents are admired, appreciated, and utilized, and who enjoy a technically demanding, team-oriented, rewarding environment. As an established, premier technology and engineering solutions company, Lakota is posed to continue significant growth.

Core Competencies

Lakota's staff is composed of experience engineers that have a detailed knowledge of military systems and associated technology and have deployed real-time mission critical systems in the commercial and military arenas. Lakota has extensive experience modernizing legacy systems through utilization of commercial-over-the-shelf (COTS) products with proven open architecture principles and proven performance in full software lifecycle development.

Through the application of its corporate technology and the systems engineering expertise of its staff, Lakota's works to maintain recognition as an accomplished provider of military tactical applications by delivering capabilities that are ready for deployment within the customer system.

Software development

Human Computer Interfaces (HCI), Real Time Embedded Systems, Combat System Application Development, Digital Signal Processing (DSP), Database design, Computer Network Defense, Target Tracking and Classification, Geolocation, Geospatial Services, 15+ Languages, and 30+ software development applications.

Systems engineering expertise

Requirements definition (UML, SysML, DOORS), system architecture design, network design, algorithm development, numerical analysis, system modeling, simulations, COTS integration, integration and testing, and Information Assurance.

Applied research and advanced technology development

Net-centric command & control applications, communication system enhancements (Ad Hoc networks, Routing Protocol Development, Free Space Optics), data visualization, information fusion (ESM/ELINT, IFF, HUMINT, GEOSPATIAL information, NCTR sensors, passive acoustic data, radar measurements, SAR/ISAR images, measurement fusion), information exchange processes, and decision aides (target classification, threat assignment and course of action recommendations).

Products/ Services/ Other Application Areas of Technology

Lakota has a successful track record of commercializing Department of Defense (DoD) focused solutions including SBIR derived technology development efforts. Company revenues have resulted from licensing technology to prime contractors and commercial entities, as well as providing 'shrink wrapped' software solutions utilizing the SBIR derived technology to prime contractors and directly to the US Navy.

Attribute Derived Classification and Association (ADCA)

Lakota's Attribute Derived Classification and Association (ADCA) product is a US Navy Product Line Architecture (PLA) compliant software component that provides the following capabilities: Single-source classification using sensor-specific features; Multi-source classification using classification data from associated tracks; and EW-to-Vehicular track association using kinematics and classification info. ADCA isn't the first product to provide these capabilities as there have been many organizations that have attempted to produce multi-hypothesis data fusion engines designed to combine diverse sources of information. However, most of those have failed to produce computationally scalable solutions that overcome the following facts: 1) Sources can provide platform classifications different levels of specificity; 2) Sources can provide emitter classifications that are ambiguous in relation to platform classification; and 3) Data association is impaired by large kinematic ambiguities and uncertainties as well as dynamic emitter observations for the same platform due to effects such as sensor mode changes. Lakota's ADCA technology addresses these challenges through several innovative strategies. It uses a taxonomy-based target classification process to relate heterogeneous sources and handle ambiguity and to verify the consistency of the fusion of classification evidence from multiple sources. ADCA adaptively selects classifications using a measure of information content to assess the quality of the classification. It is also able to handle unreliable source evidence originating from sensors when they are presented with data corresponding to a target classification of which they are ignorant. When performing data association with direction finding tracks to combat system tracks (i.e., EW-to-Vehicular track association), ADCA monitors bearing residuals between emitters and system tracks over time. It makes further use of the classification taxonomy to check the consistency of emitter/system track associations to ensure that impossible platform-emitter combinations do not occur. ADCA is being considered for inclusion in future baselines of the Aegis Combat Management System and the Surface Electronic Warfare Improvement Program (SEWIP).

Air Tasking Attribute Correlator (ATAC)

The Air Tasking Attribute Correlator (ATAC) is currently a software element within the Aegis Advanced Capability Build (ACB08 and ACB12) software baselines being deployed as part of the Aegis Modernization program. ATAC is a tactical decision aid (real-time software and visualization components) that automates the correlation of Air Tasking Orders and Airspace Control Orders with real-time tactical tracks maintained within the data store of the host Combat Management System in order to reduce operator workload and provide added information to the war fighter through tactical display consoles. This information is then used within the decision processes utilized by the rest of the host Combat Management System.

Enterprise Display Infrastructure (EDI)

Lakota's Enterprise Display Infrastructure (EDI) is an OSGi compliant Common Presentation Architecture framework that provides a plug-in architecture for incorporating visualization and data management applications to support rapid introduction of human machine interfaces. The EDI software development kit (SDK) facilitates interoperability amongst new and legacy components by providing a variety of data and user interaction services in order to create shared knowledge within the presentation framework. The EDI SDK comes with various widgets

and services, as well standalone applications ready for customization to meet your visualization needs. EDI has been tested within existing Aegis software baselines and deemed extremely effective at rapidly incorporating new capabilities into the legacy Aegis display infrastructure. Based upon these successful demonstrations, it has been slated as a candidate for potential inclusion in future Aegis baselines to satisfy the visualization needs of the new capabilities being incorporated into the Aegis Combat Management System.

Radar Designated Decoy Launch (RDDL) Softkill Scheduler (SKS)

Derived from SBIR related work Lakota's Radar Designated Decoy Launch (RDDL) Softkill Scheduler (SKS) automates the initiation of EW engagements through use of radar track data and schedules EW decoy launches at the most effective times and locations with minimal operator actions. Lakota's RDDL technology was successfully integrated with the Ship Self-Defense System (SSDS) and demonstrated at Wallops Island, Virginia.

Core Advantage

Lakota's customers and partners understand that small businesses foster innovation. As a small business provider and partner, Lakota produces and endorses innovative DoD and industry technological approaches and technologies. From the definition of "innovation" being "to make new or change in a substantive way", three examples of innovation fostered by Lakota include:

1) Lakota developed a new model for small businesses to deliver SBIR technologies to the U.S. Navy that protects small business Intellectual Property while giving the U.S. Navy a low-cost and sustainable means of integrating these technologies into Programs of Record

2) Lakota participated in revolutionizing the Combat System Engineering process within Program Executive Office (PEO) Integrated Warfare Systems (IWS) to emphasize the use of open standards, common design patterns, and the product line architecture

3) Lakota developed architectural and integration constructs to modernize legacy systems with state of the art information processing enhancements using a holistic and pragmatic approach to maintain information dominance on the battlefield

Additionally, Lakota's staff has a proven track record in providing engineering expertise to transform legacy "stove-pipe" solutions to "total system" solution to address the complex problems our customers face. As "stove-pipe" solutions allow little extensibility, a holistic approach enhances flexibility, allowing the system to incorporate new technologies seamlessly, gaining new capabilities for adaptability and meeting new mission needs. This attention to the "total system" solution has resulted in Lakota identifying and solving problems in subsystems to which Lakota products have exchanged information as well as to propose overall system architecture modifications to simplify the integration of a Lakota product and to facilitate integration of planned future capabilities. Throughout Lakota's corporate existence, our engineering staff has demonstrated they are able to see and design for the big picture (i.e., the "total system" architecture) and provide a quality solution to our customers.

Profile

Prior to founding Lakota in 1997, Lakota's corporate leadership team had many successful years leading DoD related software development efforts for commercial entities and non-profit research organizations. The technical acumen of its leadership team allowed Lakota to quickly earn a solid reputation with US Government and prime contractor customers for providing mission critical applications and solutions to complex engineering problems. This reputation for delivering superior products continues to grow today as Lakota leverages internal investment and SBIR funds to develop technically innovative products that help to improve military platform survivability and the lethality of weapons involved in US military tactical operations.

Lakota currently occupies over 6000 square feet of office space and possesses a complete data analysis and hardware/software development environment. This development environment consists of a network of desktop PCs, workstations and servers utilizing current versions of state-of-the-art engineering and office productivity software. Additionally, Lakota maintains a secure automated information-processing laboratory that has been accredited by the Defense Security Service for processing classified data.

Markets/Customers

Lakota has provided design and development expertise to numerous Government, Prime Contractor, Agency, and Private customers in support of various Network Centric Warfare and Information Superiority projects.

Government Customers:

- US Air Force (Air Force Research Laboratory)
- US Navy (NAVAIR, NAVSEA, ONR, SPAWAR)

Government prime contractor customers:

- Booz Allen Hamilton
- Data Computer Corporation of America
- General Dynamics Corporation
- Lockheed Martin
- Northrop Grumman Corporation
- Raytheon Company

Private industry customers:

- Optemax
- PrismTech

CONTACT

J. Robert Pence
President
Lakota Technical Solutions, Inc.
rob.pence@lakota-tsi.com

OFC: (410) 381-9780
FAX: (410) 381-3090

Mailing Address
PO Box 2309
Columbia, MD 21045

Physical Address
9755 Patuxent Woods Drive
Suite 270
Columbia, MD 21046

Lakota
technical solutions, inc.