



## **ADVANCING THE SCIENCE OF INFORMATION**

**From principled research to robust solutions, we transcend the boundaries of what's possible to protect our most valuable assets in mission-critical environments and help our customers make our cities and communities safer.**

# Overview

## Company Summary

Numerica Corporation is a small business whose primary focus is the development and implementation of advanced algorithms and the licensing of operational software. Numerica is at the forefront of the multi-target tracking community:

- Numerica develops MDA's Command, Control, Battle Management, and Communications (C2BMC) track processing thread.
- Numerica develops all algorithms and software for the Army's IAMD Battle Command System (IBCS) Track Manager.
- Numerica has a commercial product for multiple surveillance radar correlation and tracking, which is deployed worldwide with over 80 licenses.
- Numerica develops solutions for Space Situational Awareness, with tracking systems being transitioned to DSC2-D (Dahlgren) for UCT processing and to JMS Inc-2 for breakup processing.

Numerica's Law Enforcement team develops software solutions that integrate disparate law enforcement and intelligence data to enable search and analysis. In addition, Numerica specializes in the development of other advanced algorithms and software solutions including estimation, sensor management, and radar signal processing.

## Mission and Values

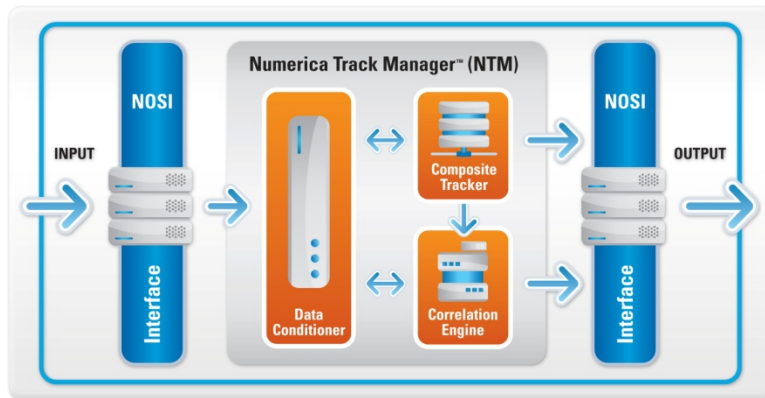
Numerica's mission is to solve the most challenging information science problems in national security and public safety.

- **Excellence.** We value high levels of talent, achievement, and performance in all endeavors.
- **Customer Success.** We value efforts that promote the success of our customers.
- **Innovation.** We value a pioneering mindset when developing technical solutions and pursuing business opportunities.
- **Integrity.** We value honesty with our customers, in our scientific pursuits, in our business dealings, and with our employees.
- **People.** We value people willing to grow and who are committed to maximizing the impact of our team.

# Products

## Numerica Track Manager (NTM)

The NTM is a high-performance modular software system that associates and fuses plot and track data from a wide variety of dissimilar sources to produce a real-time common operational picture.



### Key capabilities include:

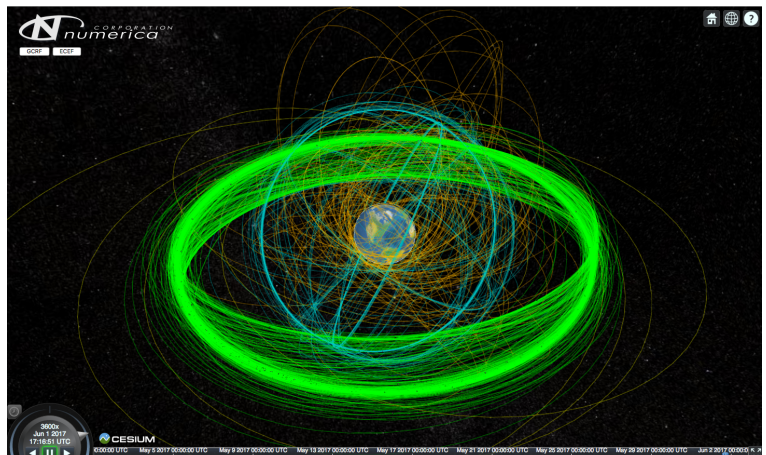
- Single Integrated Picture (SIP).
- Flexible interfaces.
- Robust, scalable track and plot capacity.
- Modular architecture.
- Real-time, accurate data fusion.

## Numerica Multiple Frame Assignment Space Tracker (MFAST)

MFAST is a purpose-built, optimization-based multiple hypothesis tracker (MHT) for Space Situational Awareness (SSA). MFAST provides a multi-sensor, multi-object tracking solution supporting uncorrelated track (UCT) resolution, breakup processing, and catalog maintenance in all regimes of space.

### Key capabilities include:

- Tracks objects in all regimes of space using obs from radar, ground-based and space-based optical sensors.
- High-performance, customized astrodynamics algorithms provide highly-accurate, real-time orbits.
- Advanced physics-based complexity reduction methods - MFAST runs on most platform and hardware setups.



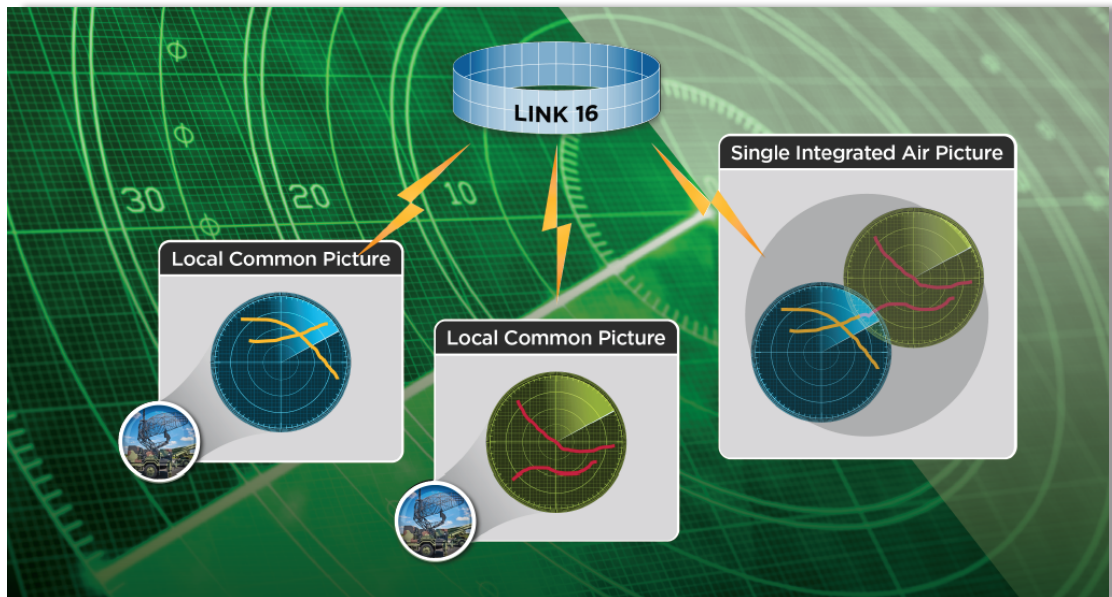


## Extended Range Air Surveillance Radar

Numerica Corporation, partnered with Engility Corporation, provides the Extended Range Air Surveillance Radar (ERASR) product. The Joint Range Extension (JRE) is a combat-proven data link capability with a strong record of performance, reliability, economy and agility. Prior to this development, radar correlation required a separate and expensive correlator. ERASR combines JRE and radar correlation into a single, affordable system.

### Key capabilities include:

- Integrates all data sources into one track file, minimizing dual tracks, swaps and spurious tracks.
- Flexible Sensor Support: adaptable to support most radars, including primary and secondary surveillance, 3D air defense and approach radars.
- Provides enhanced situational awareness for both operators and pilots.
- Is a highly deployable HW/SW agnostic solution.





## Anti-UAV Defeat System (AUDS)

Liteye Systems, Inc., provider of the AUDS counter drone defense system deployed with US military forces in combat, and Numerica Corporation, creator of robust solutions that protect our most valuable assets in mission-critical environments, are partnering to develop enhanced capabilities for Liteye's counter UAS systems.



- AUDS is a second-generation system that detects, tracks, identifies, and defeats UAS threats.
- Utilizes state-of-the-art radar.
- Precision thermal and daylight cameras.
- Advanced video tracking, and non-kinetic defeat capabilities.
- The next generation of the system will include enhancements in networking capabilities, improved sensors, and upgraded software systems.

## Lumen

Lumen is an integrated search and analysis tool for use on disparate law enforcement and intelligence data.



- Create interactive, real-time maps for improved situational awareness.
- Automatically link known associates based on connections buried in data.
- Identify trends and patterns through interactive analytics.
- Increase officer safety by delivering actionable information via easy-to-use mobile interface.

# Markets and Customers

## Air and Missile Defense

Numerica develops high-performance multi-sensor multi-target tracking systems, network bridging capabilities, and resource management solutions for air and missile defense.

- Correlation and Launch Event Association Algorithms Deployed in MDA's C2BMC.
- Distributed Target Tracking and Bridging for the Army's IAMD Battle Command System.
- Engineering analysis results for the Joint Systems Engineering Team (JSET) supporting MDA.
- Algorithms for Battle and Sensor Resource Management.
- Counter Small Unmanned Aircraft Systems.



## Space Situational Awareness

Numerica provides state-of-the-art solutions that inform operator action to protect military and commercial space assets orbiting the Earth.

- MFAST (MFA Space Tracker) transitioned to DSC2-D (Dahlgren) for UCT processing.
- MFAST being transitioned to JMS Inc-2 for breakup processing.
- Multi-Object Multi-Sensor Space Object Tracking for all regimes.
- Advanced Estimation and Data Fusion for Space Surveillance
- Uncertainty Management for SSA

## Law Enforcement

Numerica delivers mission-critical insights to law enforcement, intelligence, and security professionals through intuitive law enforcement database software, crime analysis software, and analytics.

- Lumen: Integrated search and analysis of disparate law enforcement and intelligence data.
- CJISVault: CJIS-compliant cloud storage and management of law enforcement data.
- RDW: Enhanced public safety through integrated, scalable data sharing.



# Core Competencies

## Air and Missile Defense

### Unique Capabilities:

- Distributed Multiple-Target Tracking
- Sensor Bias Estimation and Mitigation
- Sensor Resource Management
- Battle Management
- High-Fidelity AMD Modeling and Simulation
- Uncertainty Quantification

### Applications:

- Air and Missile Defense Command and Control
- Counter UAS Systems
- Forward Operating Base Air Defense
- Counter-Rockets, Artillery, and Mortar (C-RAM) Systems.

## Space Situational Awareness

### Unique Capability:

- Multiple Hypothesis Tracking for Space Surveillance
- Initial Orbit Determination
- Orbital Uncertainty Propagation
- Conjunction Analysis
- Anomaly Detection
- Sensor Calibration and Bias Mitigation

### Applications:

- Space Mission Operations Command and Control
- Spacecraft Collision Avoidance
- Catalog Maintenance
- Uncorrelated Track (UCT) Resolution
- Breakup Processing
- Threat Identification and Notification

## Law Enforcement

### Unique Capabilities:

- Integrated search and analysis.
- Crime analysis software with automated analytics.
- Create interactive, real-time maps.

### Applications:

- Commanders. Prepare briefings, monitor results of key initiatives, and increase operational effectiveness.
- Investigators. Find critical info, connect suspects across jurisdictions, and close more cases faster.
- Analysts. Identify trends and patterns, build and share interactive analytics, and do more in less time.
- Patrol officers. See important info related to any entity using mobile interface, and improved officer safety.



# Contact Information

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