

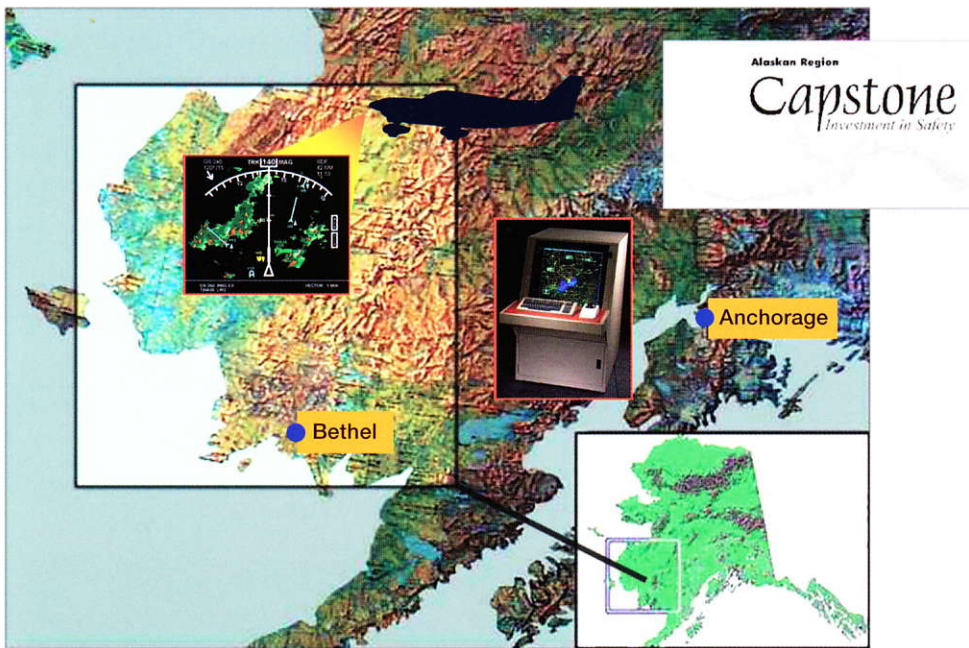


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We never forget who we're working for™

Micro-EARTS

Microprocessor-Enroute Automated Radar Tracking System





The Capstone project is a major element of the FAA's Safe Flight 21 Program.

The Micro-EARTS Air Traffic Control (ATC) automation system provides the Federal Aviation Administration (FAA) and Department of Defense (DoD) with a state-of-the-art, COTS-based ATC system that meets all requirements for en route and terminal air traffic control. Micro-EARTS includes advanced Kalman Interactive Multiple Model filter multisensor tracking algorithms that process data from airport and en route radars, Automatic Dependent Surveillance (ADS-A and ADS-B) sources and other tracking sources, providing single sensor and multisensor situation display presentations. Micro-EARTS and its predecessor system, EARTS, have been in ATC operational use at FAA and DoD facilities continuously since 1980. The Micro-EARTS system combines FAA-certified safety and tracking algorithms with an open, scalable and extensible system architecture. For en route control, Micro-EARTS monitors all low-altitude airways and high-altitude jet routes. As a terminal system, it provides approach and departure control to airports. With Micro-EARTS, en route, approach and departure control positions, plus local and remote towers, all operate simultaneously from one automation system.

Capstone, a major part of the FAA's Safe Flight 21 Program, currently uses Micro-EARTS as the ATC automation system. The Safe Flight 21 program is a joint government/industry initiative designed to demonstrate and validate, in a real-world environment, the capabilities of advanced surveillance systems and air traffic procedures

associated with free flight, using Automatic Dependent Surveillance-Broadcast (ADS-B) and Traffic Information Services-Broadcast (TIS-B) as enabling technologies. The goal of the Capstone initiative is to improve aviation safety, capacity and efficiency in Alaska through the introduction of new surveillance technologies. As part of the Capstone project at the Anchorage Air Route Traffic Control Center, Micro-EARTS functionality was enhanced to include the receipt and display of aircraft positions using data from Automatic Dependent Surveillance (ADS) sources. Both ADS-A and ADS-B reports are received, processed and displayed. Redundant communication gateway processors are incorporated into the Micro-EARTS system architecture to communicate with the ADS-A and ADS-B sources that provide position reports from properly equipped aircraft. Safety functions, such as Minimum Safe Altitude Warning (MSAW), Restricted Airspace Monitoring and Conflict Alert, were also enhanced to process ADS-B and ADS-A tracks. For ADS-A tracks, Micro-EARTS sends messages to the aircraft for contract establishment, modification, and termination.

Micro-EARTS provides the radar data processing capability for other Lockheed Martin air traffic management systems including SkyLine, German Short Term Conflict Alert, China Automation Systems for Terminal and En Route Control, Taiwan Terminal Control systems and the U.S. Marine Corps Air Surveillance and Precision Approach Radar Control Systems.

Micro-EARTS Key Features:

- State-of-the-art ATC system with integrated radar and ADS capabilities.
- Operational on multiple modern computing platforms and networks.
- Scalable color workstations from PCs to high-resolution, high performance 2k x 2k workstations.
- High availability, easily maintainable redundant system architecture.
- Surveillance interfaces to ASR and ARSR radars (up to 50 radars).
- Surveillance interfaces to ADS-A and ADS-B sources.
- Advanced Kalman Interactive Multiple Model filter multisensor tracking algorithms including high performance aircraft (up to 10,000 tracks).
- System plane size up to 3000 x 3000 nm.
- FAA-certified Minimum Safe Altitude Warning, Conflict Alert and Restricted Airspace Monitoring safety functions.
- Interface with and processing of information with other systems (e.g., ARTCC, ARTS, ASOS, NEXRAD, TMU, FDIO).
- Modern, real-time, multi-mode ATC situation display processing with user preference sets, transparent windows, 6-level graphical weather.
- Remote tower displays.
- An extensible set of FAA-certified surveillance data and flight data processing functions.
- Open, extensible, scalable, and supportable to easily allow addition of new P3I functionality and technology insertion.



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Lockheed Martin Air Traffic Management has been assessed as a Software Engineering Institute Capability Maturity Model (SEI CMM) Level 4 organization and is registered as an ISO9001 company.

Micro-EARTS is a state-of-the-art ATC system with integrated Automatic Dependent Surveillance capability.