

Tour – Lincoln Laboratory Main Campus

Personnel selecting this option will visit all of the below facilities.

Wide Area Persistent Surveillance

The objective of the Wide-Area Infrared Sensor for Persistent Surveillance (WISP) program is to improve nighttime aerial persistent surveillance by using readily available detector array technology mated to a readout integrated circuit (IC) designed to implement the digital-pixel focal plane array concept. WISP produces a 15-km-diameter circle of persistence (CoP) on the ground from an 18-kft altitude with 0.8-m average ground sample distance (GSD). Digital-Pixel Focal Plane Arrays (DFPAs), developed at Lincoln Laboratory, are a key enabling technology for WISP. DFPAs allow a very large scene to be scanned quickly without stopping and stabilizing the system to acquire individual frame images. The WISP sensor consists of a modestly sized DFPA coupled to a high-speed, continuous-motion scanner. The DFPA and scanner are mounted to a three-axis continuously rotating gimbal. WISP acquires multiple wide swaths of image data that are stitched together in software to render a large (850 Mpixel) two-dimensional image frame. The current WISP sensor utilizes a 640 x 480 scanned sensor array. The current version, although still being used in experiments, has the capability for useful deployment.

Integrated Weather and Air Traffic Control Decision Support Facilities

The Integrated Weather and Air Traffic Test Facility supports the Laboratory's work on improvements in flight safety and efficiency.

Air Traffic Control Decision Support Facilities

The facility features a high-fidelity airport control tower simulator and a real-time operations center for various live prototype tests, including tests of the Corridor Integrated Weather System that provides year-round depictions of storms for aviation traffic flow managers, controller supervisors, airline dispatchers, and other aviation users in the continental United States. Data plots showing the interaction of aircraft with weather at large airports in the northeast are automatically created nightly and available on a website the next morning along with complete archived data from the previous day. Offices for the system monitors are adjacent to the Operations Center, so that staff can quickly access the system for analysis or repairs.

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Air Traffic Management Laboratory

Demonstrations, simulations, and large system tests are held in the Air Traffic Management (ATM) Laboratory. In the ATM Laboratory, extensive live surveillance feeds are available. Systems hosted in this laboratory include the Runway Status Lights system and the Traffic Flow Management System. Collocation of the ATM Laboratory with the Enhanced Regional Situation Awareness Development Lab also enables data-driven next-generation architecture studies and concept development for national security issues such as airport security and air security services. The computer room houses a 200+-node computer cluster and 300 terabytes of data storage used to keep the real-time systems running, plus another large complement of computers used for analysis.

Micro Electronics Laboratory

The Microelectronics Laboratory is a state-of-the-art semiconductor research and fabrication facility supporting a wide range of Lincoln Laboratory programs. The 70,000-square-foot facility has 8100 square feet of class-10 and 10,000 square feet of class-100 cleanroom areas. The 200-mm wafer equipment is continually updated and includes a production-class complementary metal oxide semiconductor (CMOS) toolset with angled ion-implantation, cluster-metallization, and dry-etch equipment; chemical-mechanical planarization equipment; and rapid thermal processing and advanced lithography capabilities. A molecular-beam epitaxy system is used to provide high-sensitivity and highly stable back-illuminated devices in the ultraviolet and extreme ultraviolet ranges. In addition, the Microelectronics Laboratory supports advanced packaging with a precision multichip module (MCM) technology and an advanced three-dimensional circuit stacking technology.