LEAPS Operational Concept

LEAPS was designed and integrated by Spiral Technology, Inc. for Aero-View LLC and was architected to marry airborne sensors and ground-based instrumentation in support of the Law Enforcement and/or Disaster Response and Recovery agencies of counties and municipalities.

The mission of LEAPS is to provide an affordable reliable manned or unmanned aerial surveillance system that readily integrates with existing Law Enforcement and Local Government infrastructures.

Using a Cessna 172 platform, the first implementation of the LEAPS project was designed for the City of Lancaster, California to assist the Los Angeles Sheriff’s Department by providing aerial video surveillance that will provide event detection and rapid situation assessment for better utilization of emergency resources.
Aerial Video Surveillance

Since the mission of this LEAPS implementation is to provide both day and night support for the Sheriff’s department, the cameras being used provides both Visible (daylight) and Infra-Red (night time) images. Operating in four (4) 2.5 hour sorties, this implementation of LEAPS will provide 10 hours per day of continuous surveillance.

LEAPS GPS Coordinate System

The Law Enforcement Ground System Operator (Dispatcher) will create video sensor tasking by entering a street address, point and click on a selected area of the displayed map, or move the cursor to the center of the image to be viewed. This sends commands to the aircraft and immediately points the camera toward the selected GPS Coordinates. From this station the Dispatcher may: 1) Point the Camera; 2) See the current location of the LEAPS Aircraft; 3) Zoom the Camera In/Out; 4) Track an item in view, i.e. vehicle, person, etc.; 5) Direct the LEAPS Aircraft to the scene; or 6) Return the Aircraft to normal surveillance mode.

Pilot Tasking Software

In the LEAPS Aircraft, the pilot will follow a generated air vehicle desired surveillance ground track to be delivered via the Pilot Tasking Software. This flight path will be based on air vehicle altitude and will be a calculated ground track needed to optimize the Law Enforcement Ground System Operator’s selected view and generate a desired ground track that is published to the Pilot Tasking Display. If the aircraft is to be dispatched to provide a more optimized view of the selected scene, the pilot will be provided a ground track to optimize time and access to the selected information.

Data Privacy Protection

All imagery and GPS position data is down linked to the ground and stored in a Storage Area Network located in the Law Enforcement Facility. None of this data is available onboard the aircraft or viewable by anyone other than Law Enforcement. This data may be captured throughout the duration of the LEAPS operation or only when record is selected. It is also backed up to tape storage (Write Once–Read Many) to ensure that tampering is not possible. This is critical since these data may be used for evidentiary purposes. Stored data may be searched by Date/Time and GPS position.