Real-time urban weather & air quality mapping
Our Ecosystem

AIRO is actively designing the future of Air, Intelligence and Movement (AIM) and developing a comprehensive ecosystem of aerospace solutions.
Why Drones in Atmospheric IoT?

Drones provide a platform for remote sensing and acquisition of data, internet of things while performing other missions.

The Result:
Safer, Cheaper and Easier to obtain data for valuable decision making.

They can operate within environments that are inherently dirty, dangerous or dull.
UAV Systems

Industry Leading Unmanned Aerial Vehicles

Sentinel
- Manual or pre-planned autonomous flight
- Tethered up to 350 feet allows Indefinite flight time
- Can launch/recover from small area
- Tether powered from A/C or D/C ground power supplies
- Integrated Cloud connectivity (Bluemix, Watson, AWS)
- Tether includes powerline, multimode fiber optic cable (10 GBS) and Kevlar 1000N retention

Magpie
- Fixed-wing commercial utility UAV
- The first FAA Certified Drone
- Configurable Sensor Platform
- Fully autonomous takeoff & landing
- FAA Approved Manuals
- Does not require catapult or recovery system
- Up to 2 hours endurance
- Speeds of up to 60 Knots
Current Drone Sensors

- RGB / Daylight
- Multispectral
- Thermal
- Inertial/Compass
- GNSS
- Temp, RH, Pressure, Derived Winds
- Aerosols (VOC Shown)
Drone Data Collection platform

Airborne & Stationary Internet of Things (IoT)

- Secure and Public Clouds
  - IBM Bluemix, Maximo, and Watson
  - AWS and Azure

Sensurion 4G IoT data module

Mobile apps

Services

- Support missions with immediate utilization of data via secure, shared access.
- Our aircraft and ground-based sensor IoT platforms collect real-time data, and immediately stored on public or private, secure clouds.
- Seamless, intelligent solutions to access, manage, analyze and share data

Extended services include:

- Direct Application Integration to GIS systems and other enterprise application; Expanding Artificial Intelligence (AI) through IBM Watson and AI services.

All Sensurion-operated Drones directly liked as *Flying IoT Devices*

"Dynamic Digital Intelligence"
Sensurion Communications and Watson IoT Architecture

USER LAYER
- IOT USER

PROXIMITY NETWORK
- DRONE
- Edge APP

PUBLIC NETWORK
- PEER CLOUD

PROVIDER CLOUD
- DEVICE REGISTRY
- DEVICE MANAGEMENT
- DEVICE IDENTITY SERVICE
- API MANAGEMENT
- NODE-RED
- OBJ STORE
- WATSON V-R
- CLOUDANT
- VISUALIZATION

APPLICATION
- SECURITY
- INFORMATION GOVERNANCE

ENTERPRISE NETWORK
- USER DIRECTORY
- USER MANAGEMENT
- ENTERPRISE APPLICATION
- TRANSFORMATION & CONNECTIVITY

LEGEND
- Application
- Infrastructure
- Data Store
- Management/API
- not Used or N/A
- Security
- Analytics

© Copyright IBM Corporation 2016
Enablement of Chicago Droneports

- Scheduled or ordered transport
- Flight planning
- Drone dispatched
- Cargo load pickup
- Cargo delivery
Goose Island Mission

- Medical Deliveries
- Critical Parts
- Foodstuffs

Port of Chicago Mission

- Vessel standoff inspections
- Pollutant Monitoring
- Small package deliveries from Port office to USCG

FAA Pilot Program Submission

Missions will be cognizant of social issues/responsibilities
Drone Enabled – Asset Weather


Current Weather:
- Wind Speed: 10 MPH
- Direction: S
- Temperature: 63°F
- Humidity: 54%

Daily Forecast:
- Relative Humidity
- High Temperature
- Low Temperature
- Wind Speed
Mission analytics using weather

Description:
Due to recent weather activity of above average rainfall for the month of September, it is advisable to conduct an inspection of the Flare Stack. Specifics to lookout for include corrosion, any issues with flooding, issues from Acid rain and rust.

Severity: Moderate
Certainty: Possible
Thank you!