



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



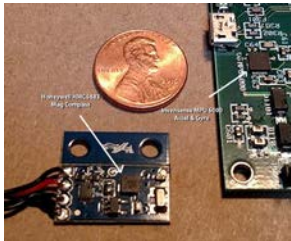
RGB / Daylight



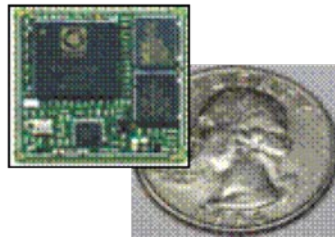
Multispectral



Thermal



Inertial/Compass



GNSS



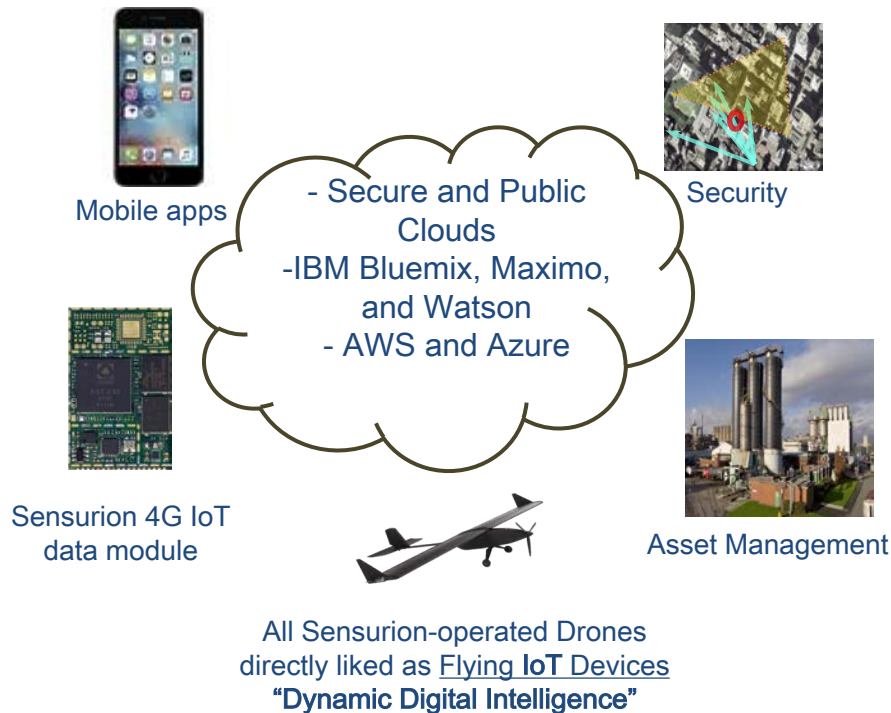
Temp, RH, Pressure,  
Derived Winds



Aerosols  
(VOC Shown)

# Drone Data Collection platform

Airborne & Stationary Internet of Things (IoT)



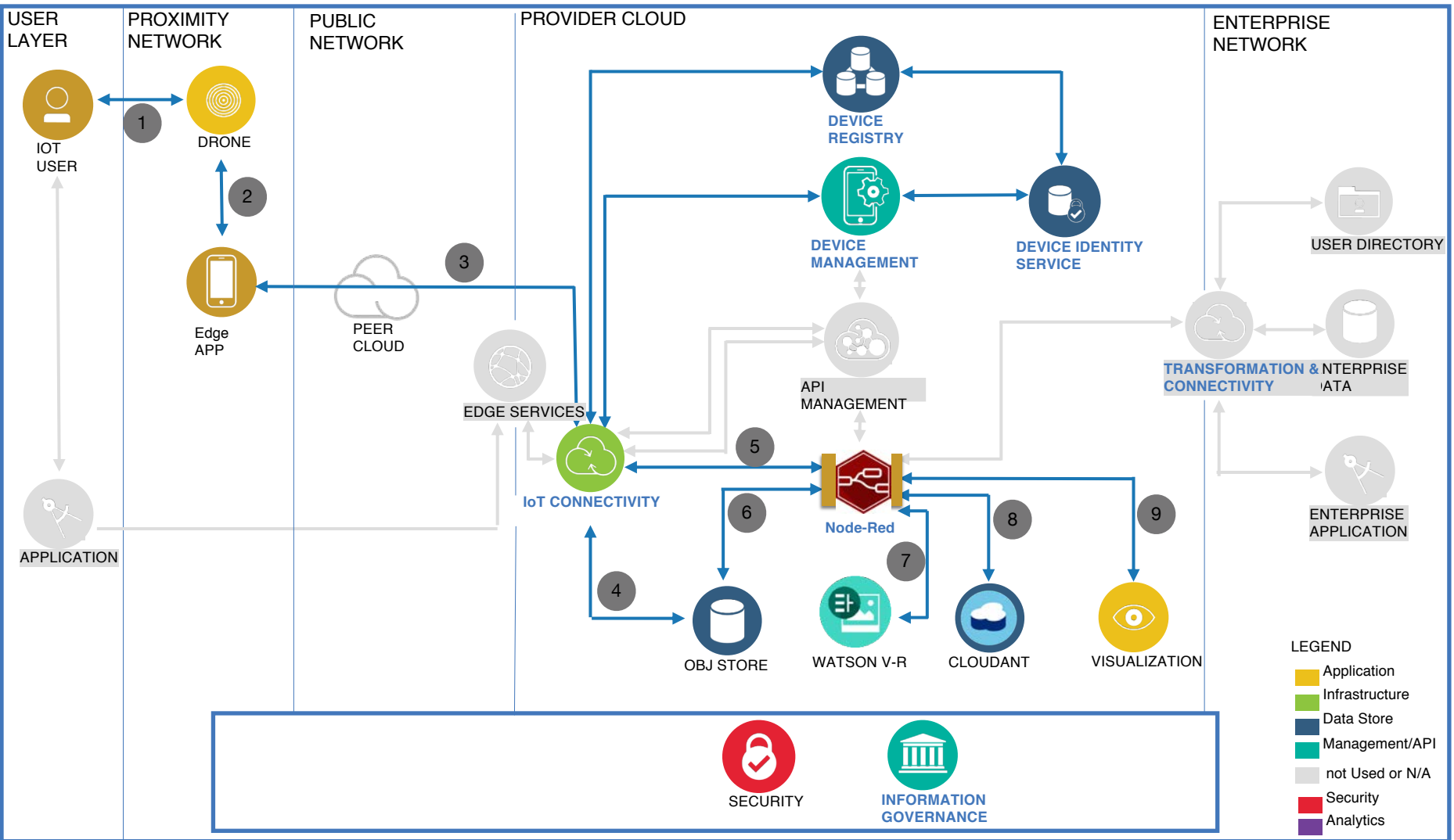
## Services

- 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

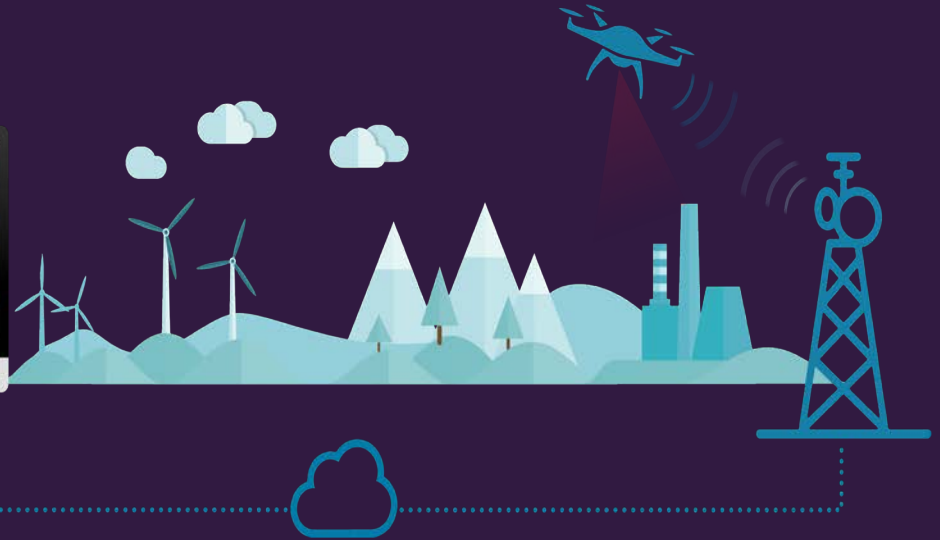
## Extended services include:

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

# Sensurion Communications and Watson IoT Architecture



# Enablement of Chicago Droneports



Scheduled or  
ordered  
transport

Flight planning

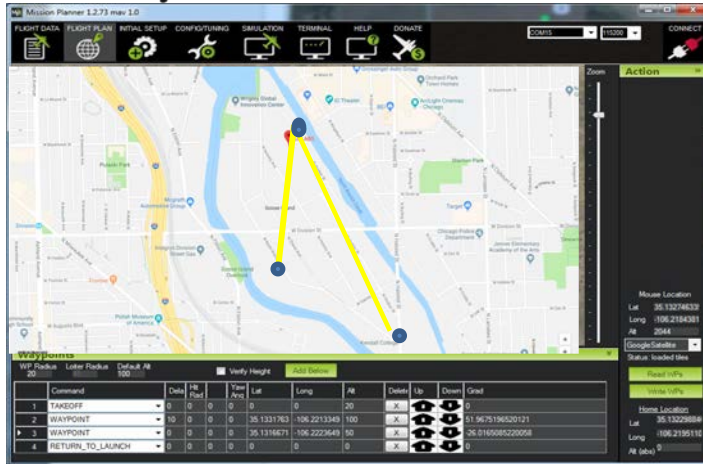
Drone  
dispatched

Cargo load  
pickup

Cargo delivery

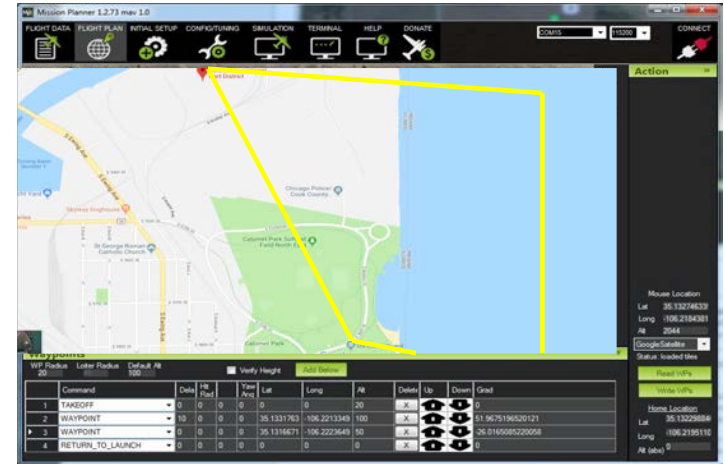


# City of Chicago and Sensurion



## Goose Island Mission

- Medical Deliveries
- Critical Parts
- Foodstuffs



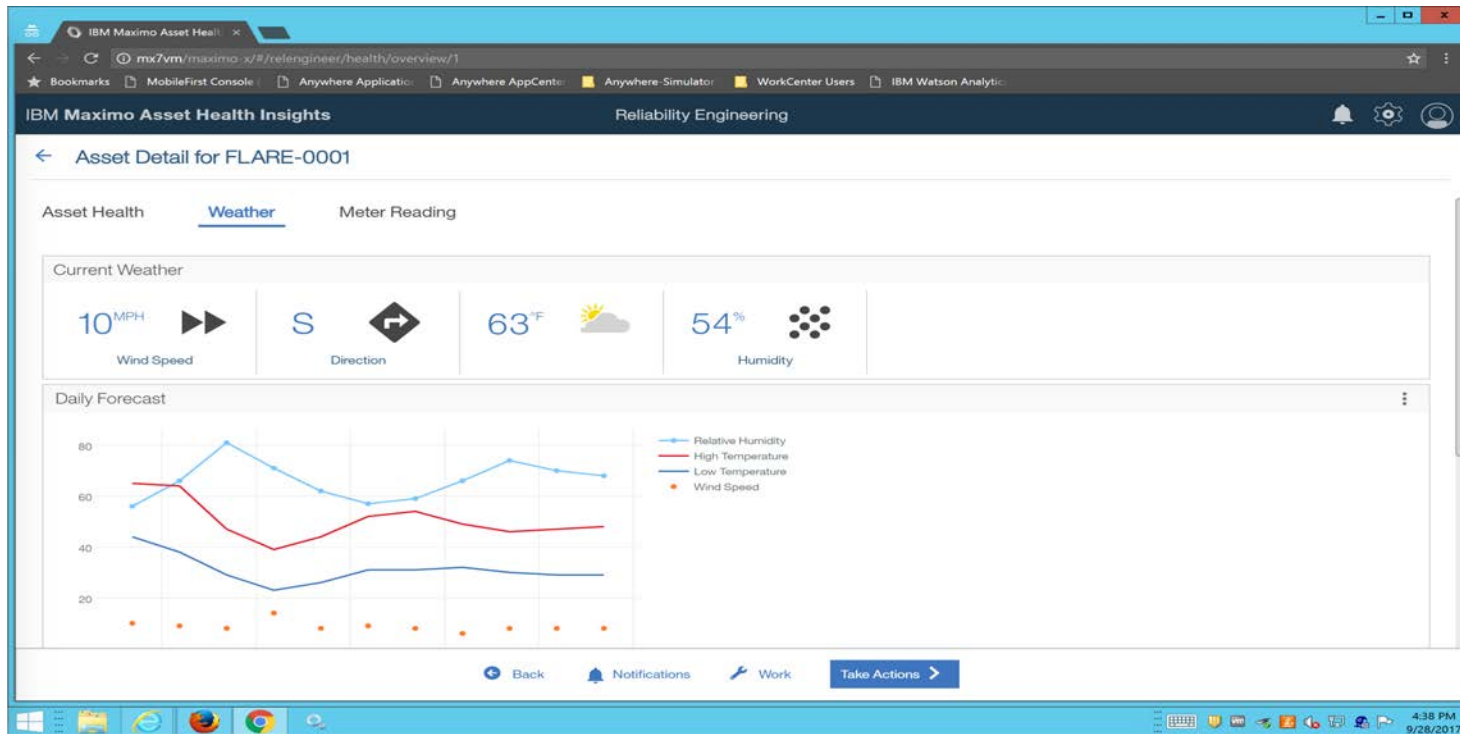
## Port of Chicago Mission

- 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



Perform Mission

Push Flight Data to Cloud

Process Flight Data

VR, IoT, EXIF, Predictive

Drone Enabled Asset Health Weather



# Mission analytics using weather

**V-ALERT** **SENSURION AEROSPACE**

Menu

Weather Pattern Corrosion

Details Photos Docs Panor Alerts

Media Tools Territory Weather

Photo Upload 1.5% of 1 GB

Flare Stack License Plate

<b>FlareTech</b> MADE IN CANADA	
Vendor:	FlareTech, Inc.
Customer:	Progress Energy Canada Ltd.
Purchase Date:	07/08/2016
Location:	4-53 S-14 G-8
Size:	16" HP & 10" LP x 90' Tall
HP Inlet:	Shell Gypsum Utility Flare Stack
LP Inlet:	10" 150# SPWN
Pilot Model:	PT 991
FlareTech Ignitor Model:	FT 990 120
Vendor Serial Number:	15-1108
FlareTech Phone No.:	403-742-2212
FlareTech Email:	info@flaretechnic.com

**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**

Map Satellite

Historical Weather for  
COMPRESSOR STATION A-053-B / 094-G-08

Date Range  
From: 8-14-2016 To: 8-14-2017

Precipitation Wind Temperature

2016 2017

**Weather Pattern Corrosion**

- Corrosion, malfunction very likely
- Corrosion, malfunction somewhat likely
- Corrosion, malfunction not likely

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# Thank you!

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