Commercial use of small UAVs in transportation and infrastructure

The problem…the UAV solution

- Potential users across many industries want to employ UAS into their operations, however, technology, certification, and knowhow doesn't exist for them, with any one supplier…until now!
- Unmanned aircraft systems serve niche purposes in many diverse markets
- Navigation of US regulatory environment critical for domestic market growth
- Customers seeking capable products, knowledgeable people, and dynamic operational guidance
- World-class operations and training experts on staff

UAS Opportunity

- **Scope / Size**
  - Global market $6B-$14B annually
  - $80B in a decade!
  - US market $4-$8.4B annually
  - Civil and commercial markets expanding exponentially
  - Military seeking cost-effective UAS solutions
- **Target Markets**
  - US Civil / Commercial
    - Oil and Gas
    - Power Infrastructure
    - Training
    - Agriculture
  - US Government Agencies
  - US Military
  - International Markets

Early Adopter Landscape

Oil & Gas

- Exploration
- Geophysical Survey
- Drilling
- Transit / Pipeline
- Refinement
- Security

Critical Infrastructure

- Power lines
- Power plants
- Ports
- EMS
- Fire / Police / CST

Training

- FAA Test Ranges
- Universities with Aviation Degree (UAS)
- Other flight schools
- Flight Safety / initial / recurrent training companies

ENG / Film Industry

- Aerial footage
- Replace Helo
- Dash & Loiter
- Big Data

Competitive Snapshot

- Marketplace stratifying
- Differentiators
  - Programs of record
  - Sales
  - Domestic and international presence
  - Full US Commercial Operations for Oil/Gas, Training, Animal Monitoring, Agricultural.
  - FAA Special Airworthiness Certificate, COAs, and broad 333 exemption
- Top Tier (Aerovironment, Boeing, Etc.)
- Pushing the top tier – Sensurion
  - Certification traction
  - OPA and UAS
- Middle – product development, sales, no certification
- Bottom – “mom and pop” and hobbyists

Sensurion Vision

To be a leading supplier of special-use small Unmanned Aircraft Systems, operational services and management to civil, commercial and military customers, worldwide.

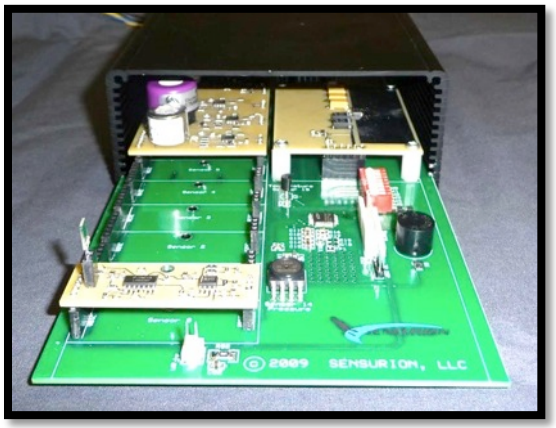
Sensurion Traction

- Founders/ investment and A-Round capital raised for product development and market readiness
- First class of companies to certify UAS in the US
  - Special Airworthiness Certificate (SAC)
  - Certificates of Authorization (COA)
  - Sec. 333 waiver application via Channel Partner (BlueChip UAS)
- Sensurion MAGPIE UAS in operation with US customers
- Significant investment by the State of Nevada (Sensurion's partner) in UAS operation and certification
- One of a few known sUAS companies to design and manufacture aircraft, autoflight, and sensor package
- Created scalable manufacturing process
- Significant margins allow us major competitive edge vs. big aero

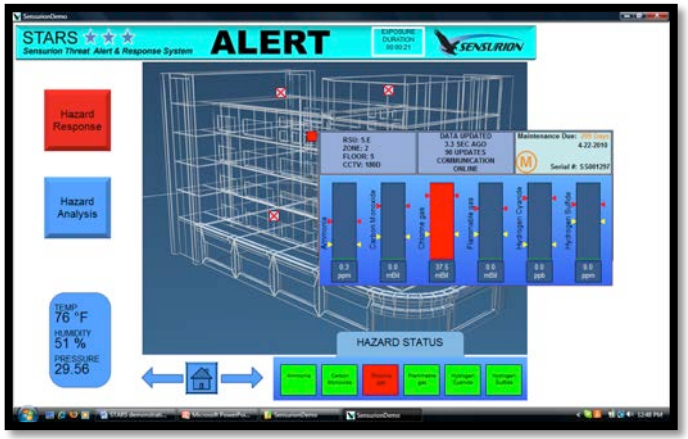
OUR TECHNOLOGY

Magpie™ sUAS

sUAS storage in standard rifle case



Sensurion's RSU – (Remote Sensor Unit), configured for manned vehicle or building application



Chlorine Gas Alert via - Sensurion Threat Alert and Reporting System (STARS) graphic display used in MGM Grand Casino prototype / demo installation

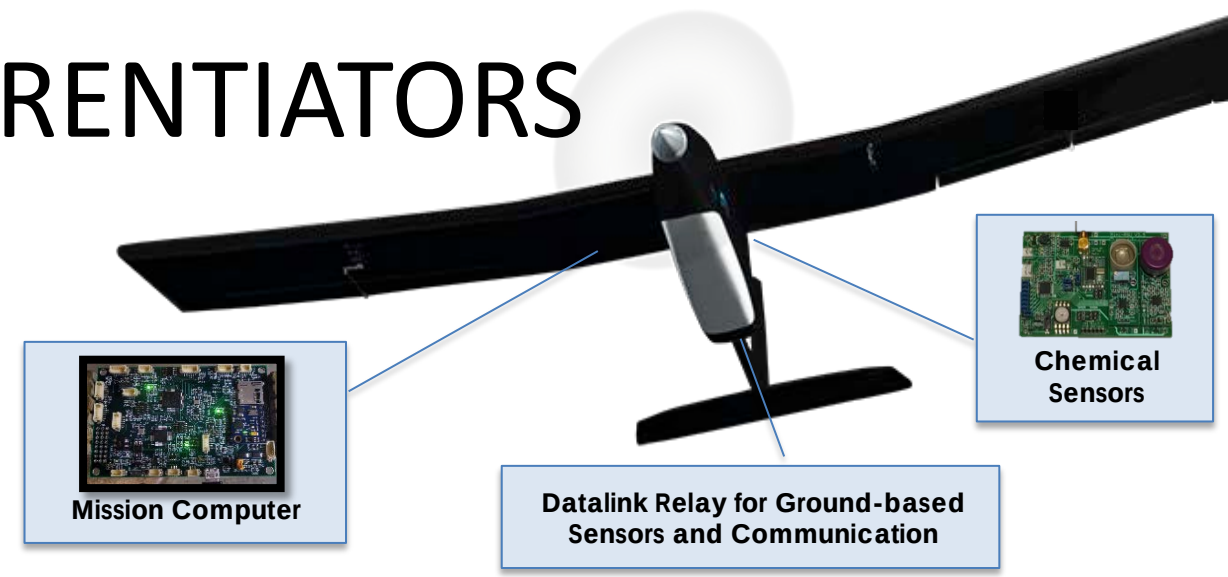
SENSURION
AEROSPACE

MAGPIE™ UAS (STATUS)

- 4th generation Sensurion sUAS platform (family of sUAS)
- Received FAA Special Airworthiness Certificate (SAC) December, 2014
  - Multiple FAA Certificates of Authorization in place
  - N106MP FAA registration
- Sensor Capabilities
  - EO/IR camera system
  - Chemical Aerosols
  - Flammable Gases (ex:wellhead “Sour Gas”)
  - Power line fault detection
  - Atmospheric Monitoring
- Hand-launched, small-area recovery
- Highly portable
- Electric propulsion
- 2 hour flight duration

SENSURION AEROSPACE

KEY DIFFERENTIATORS

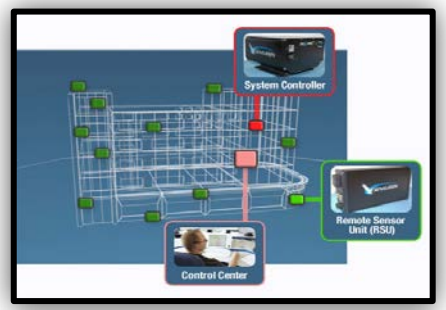


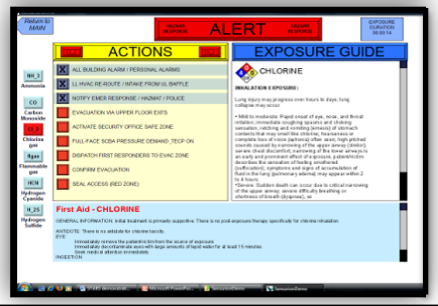
- Highly experienced leadership team with good FAA credibility
  - Approval/certification experience and focus
  - FAA-compliant operations experience
  - Broad, successful business experience from startups to global companies
  - ***FAA airworthiness and operational authorizations in place***
- Very adaptable platform design
- Internal Sensor development, manufacturing, capabilities, and focus
- Internal Mission Computer technology (autopilot/FMS), development, manufacturing, and certification capability
- Strong alliances & relationships with key players

SENSURION AEROSPACE

STARS™ SENSOR SYSTEMS

- Fully operational detection and network system for airborne threats including toxic gases, explosive gases, and radiation
  - Fixed and mobile operations
- Graphic display system with monitoring, alert, and user interface for ground-based applications such as buildings, campuses, and vehicles
- Broad spectrum of interchangeable sensors helps users tailor sensors for mission specific needs
- sUAS sensor system adapted from ground-based system
- Sensor system is coupled into autoflight system to aid in adaptive flight regimes (i.e. tracking aerosol plumes)

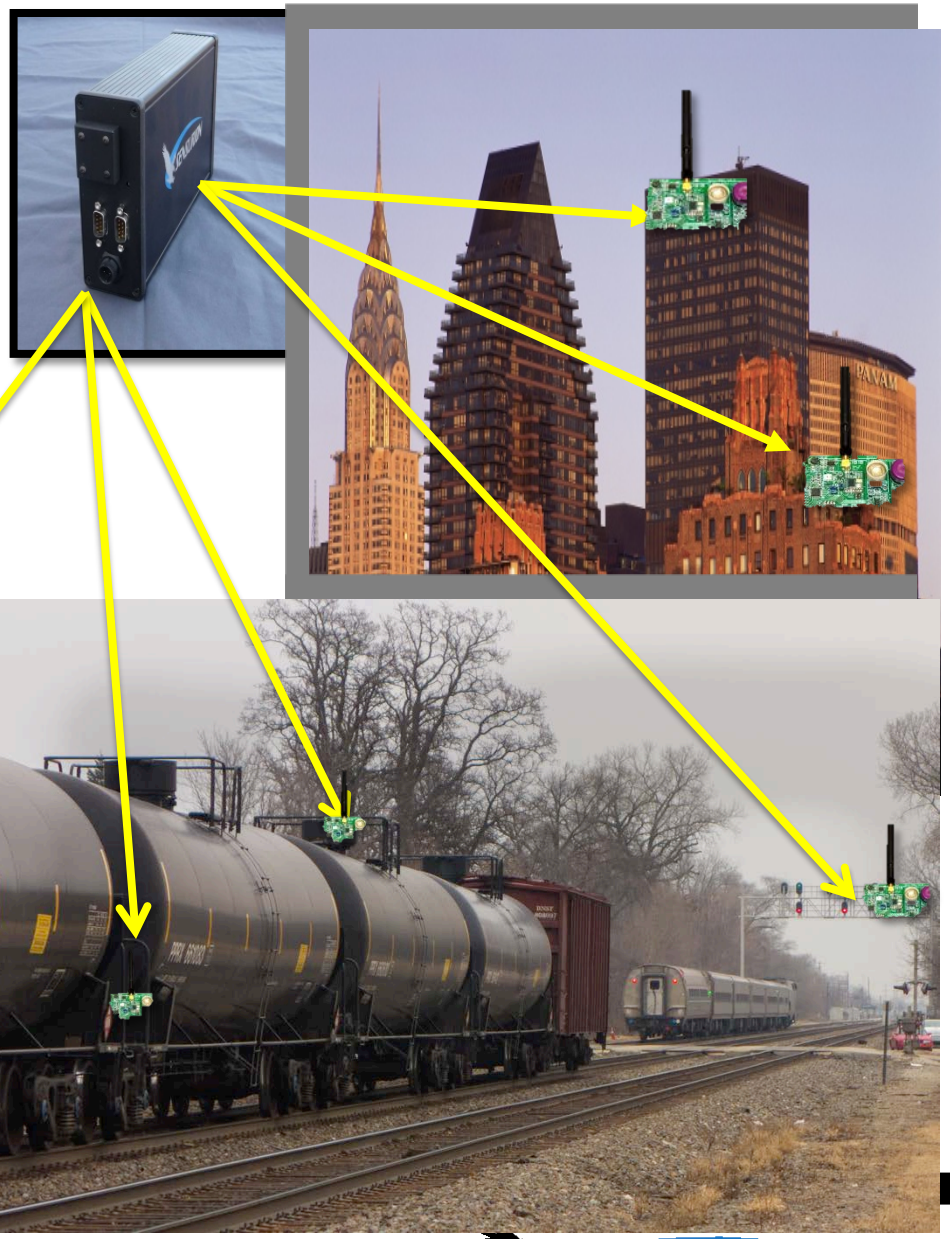




SENSURION AEROSPACE

SENSOR OPTIONS

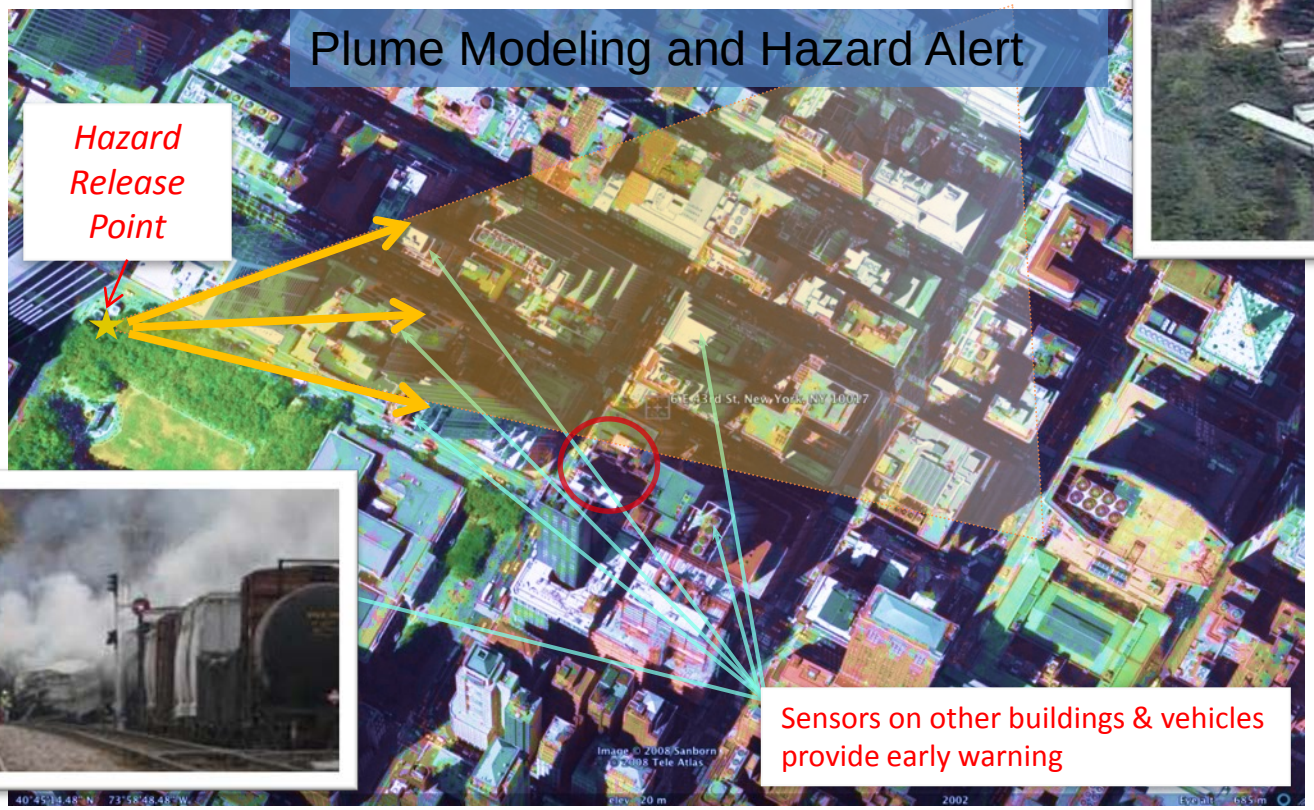
- Fixed point and mobile sensors
- Configurable sensor complement
- Networked communications



- Toxic chemicals
- Flammable gases
- Petroleum products
- Radioactive materials

SENSURION
AEROSPACE

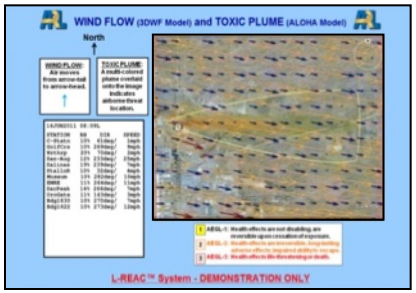
AERIAL & GROUND SENSOR INPUT TO PLUME MODELING

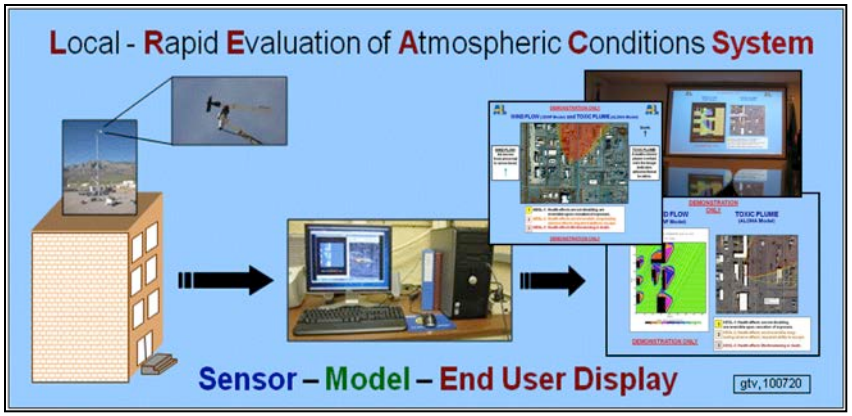


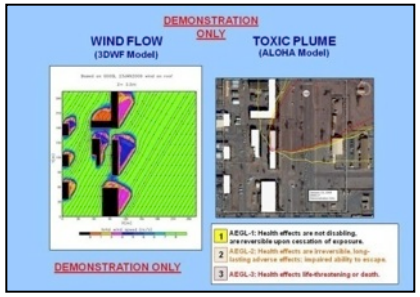
- Atmospheric modeling provides detail of hazard motion
- Hazard plume track and concentration data
- Expanded sensor network (ground-based and aerial)

SENSURION AEROSPACE

Army Research Lab CRADA - L-REAC® System for Civil Applications

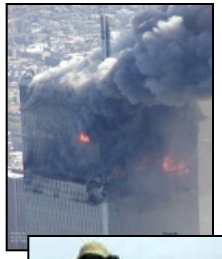


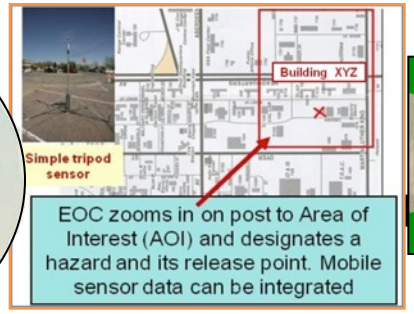




L-REAC™ System – A Decision Aid for Airborne Hazard Releases

1. Provides authorized users 24/7 wind field displays across an "Area of Interest" (AOI); includes building and local terrain features.
2. Produces a quick hazard threat-zone estimate associated with a chemical spill, CBRNE threat event or any airborne hazard.
3. Provides real-time Quality Control data assessment tool.
4. Provides Data Archive for post-incident analysis.

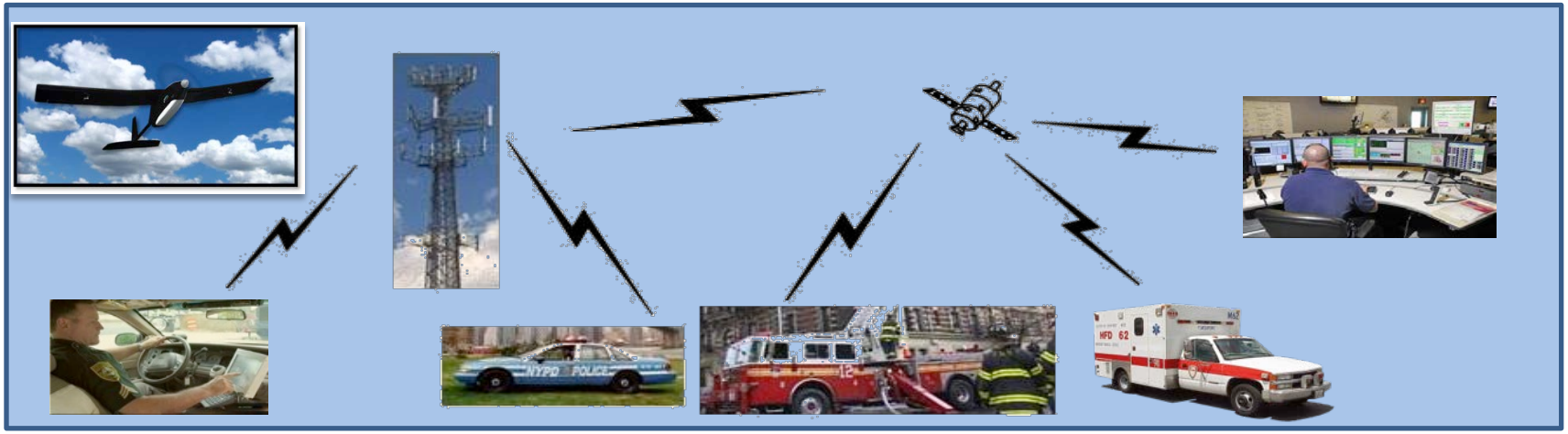




SENSURION AEROSPACE

(POC: gv, 2012)

EARLY WARNING SYSTEM INTEGRATION



Emergency Response / Law Enforcement

- Sensors on vehicles and fixed locations detect airborne hazards
- Mobile system alerts operator of immediate danger
- Sensor data sent to Emergency Operations Center for broad notification and response
- All mobile sensor data mapped together for “big-picture”
- sUAS aircraft and fleet available as “stand-off” sensor probes and networked communications relay platforms

SENSURION AEROSPACE

PROTECTING CRITICAL INFRASTRUCTURE AND LIVES

PLUME DETECTION, MODELING AND EARLY WARNING

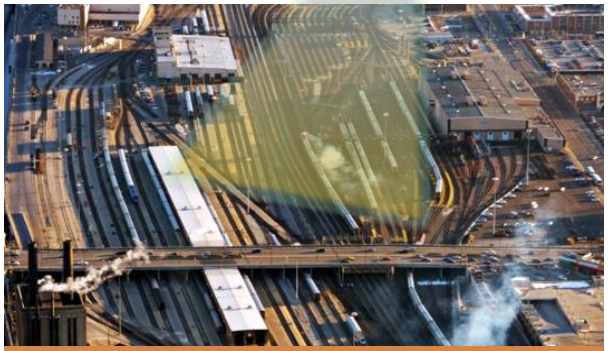
Protection

Early Warning

Rail Yard

Shared Tracks

Safety & Security



SENSORS IN CRITICAL LOCATIONS AND ON UAS AERIAL PLATFORMS

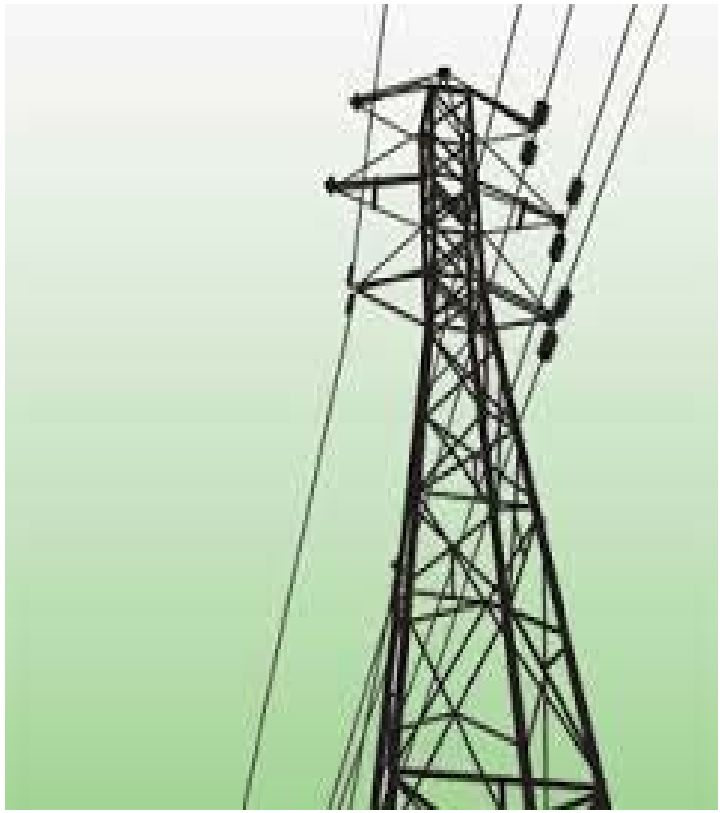
SENSURION AEROSPACE

Critical Infrastructure Monitoring

- Fixed and Mobile Applications
- Ground and UAS deployment
- Configurable Sensor Systems
- Visual and infrared imaging
- Transportation assets and right of way monitoring
- Police / Fire / EMS, CST (Civil Support Teams)
- Communication Relay

SENSURION AEROSPACE

Powerline Transmission

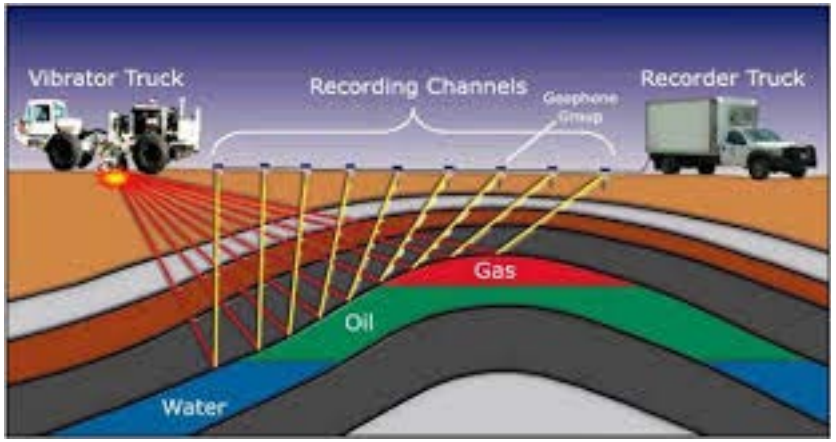


- Overheating components
- Foliage intrusion
- Transmission line fault detection
- Aerial sensing and security

Oil & Gas

Exploration and Transportation

- Seismic monitoring
- US / Canada / global
- Enormous global potential f
- Pipeline
- ROI for leak detection – even a small leak or break can cost $MM
- Gas sensors and standoff detection
- Currently using manned aircraft for survey



Oil & Gas

- Additional Opportunities
  - Gas meter data collection in remote areas
  - Security patrol
  - Data collection from well heads / critical / remote
  - Chemical sensing
  - Ports

Training

- Forecasts for thousands of pilots and observers
- FAA will require some sort of licensing or endorsements – from examination thru ATP
- Many universities offer new B.S. – Unmanned Systems degree, but little “flying”
- MAGPIE as primary trainer

ENG / Aerial Filming

Replace / Reduce
News Helicopter Operations

- Cost effectively replace helicopter-based filming
- Access to many more aerial news opportunities than Helos
- UAS may provide additional “Big Data” opportunities - multitasking
- Certification path for flights above populated areas (manned / OPV / UAS)

ACTIONABLE INFORMATION ON CRITICAL INFRASTRUCTURE

SENSURION AEROSPACE

Thank you!

Captain Joe Burns

C.E.O.

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