



# AGRISOURCE DATA

Commercial UAS & the Impact of State Regulations  
Southern Legislative Conference  
July 20, 2015

# \* Meet Ben

Currently the CEO of AgriSource Data; he was formerly the COO of VSG-Unmanned & has held leadership positions in the defense, telecom and private equity industries



## Ben Worley

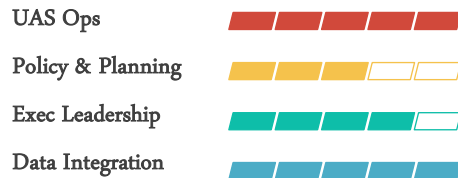
*Defense & Commercial Unmanned Systems*

With more than a decade in data collection & UAS operations, Ben is a nationally recognized SME for commercial UAS with a heavy emphasis on agriculture & forestry

### Career Highlights

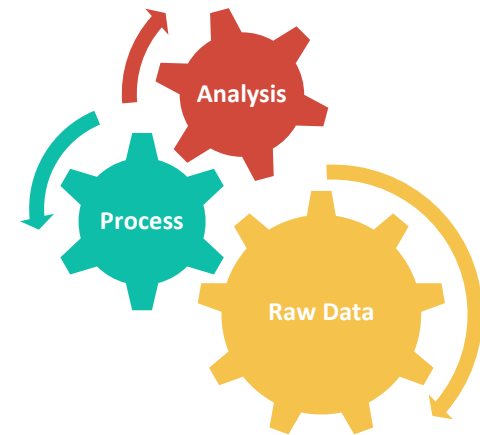
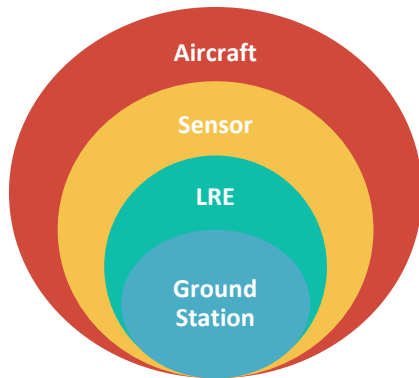
- 1<sup>st</sup> DoD ScanEagle UAS Operator
- Built USAF Tier II UAS Program
- Combat veteran
- 11 years, 3,500+ UAS flight hours
- ISR Operations SME
- Industry Leader in Commercial UAS
- Frequent speaker, panelist & lecturer on commercial application of UAS

### Professional Skills



# \* Defining UAS

**Unmanned Aircraft System (UAS)**, AKA Drone, UAV, RPA, Flying Robot, all the same thing, right?



1.

**The “S” stands for system**  
Several components make up the system we call UAS; the variations are almost limitless. Most of the other commonly used terms refer only to the air vehicle itself.

2.

**Multi-mode flight & nav**  
Multiple components make up the flight & navigation process; focus on ease of use, safety & redundancy.

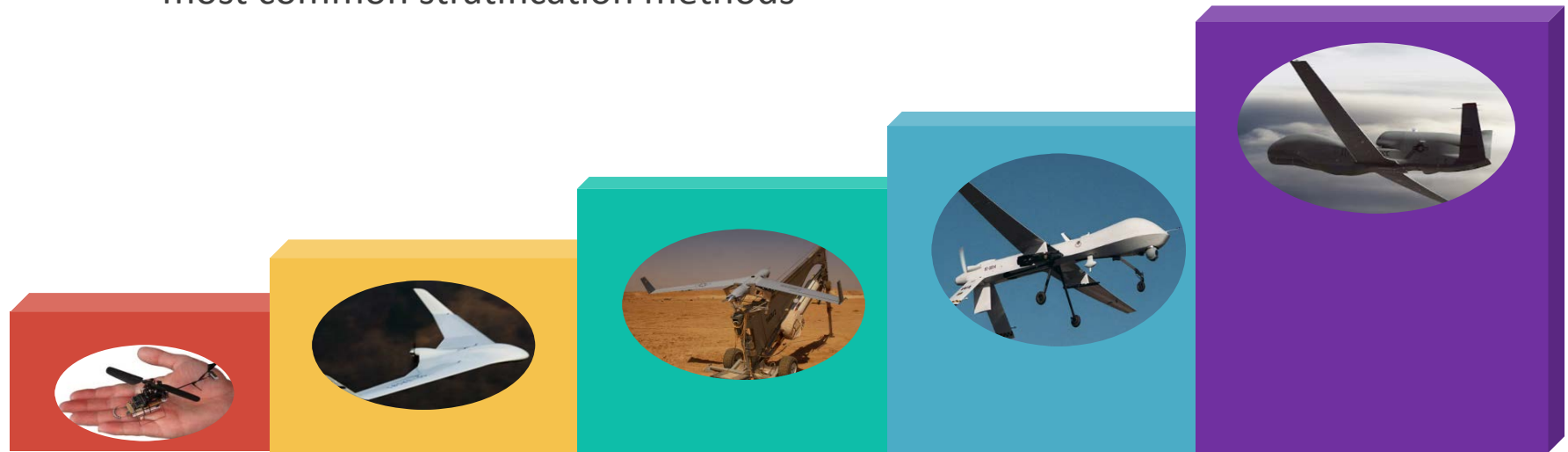
3.

**Flight is just the beginning**  
The goal of most commercial UAS is to create actionable information which requires converting lots of raw data into a useful format.



# \* Defining UAS

There is no universal classification of UAS, size and capability are the most common stratification methods



## Micro

### Micro UAS

- <5lbs
- 15-60 min endurance
- <1 mile range
- <1k ft alt

## Small

### Small UAS

- <55lbs
- 30-180 min endurance
- <10 mile range
- <8k ft alt

## Tactical

### Tactical UAS

- <500lbs
- 5-20 hour endurance
- <150 mile range
- <15k ft alt

## MALE

### Medium Alt, Long Endurance

- >500lbs
- >15 hour endurance
- BLOS range
- <30k ft alt

## HALE

### High Alt, Long Endurance

- >500lbs
- >20 hour endurance
- BLOS range
- >301k ft alt



Most UAVs fall into 1 of 2 styles:

- Fixed Wing
- Multi-Rotor

Fixed Wing Applications:

- Agriculture
- Forestry
- Pipeline
- Power Line
- Development

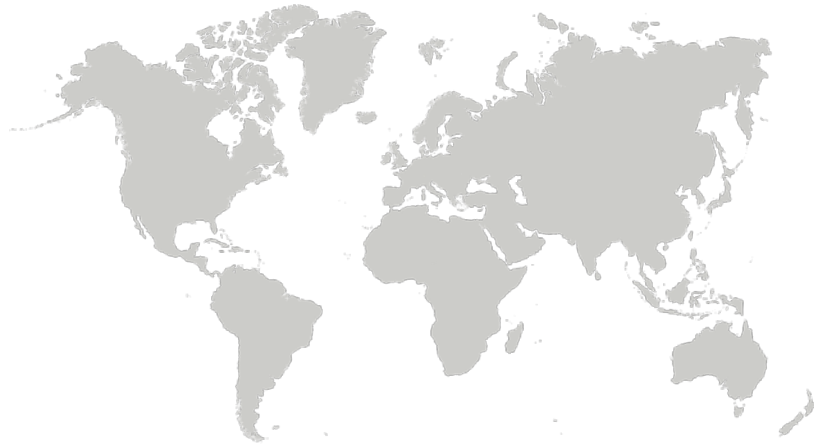


Multi-Rotor Applications:

- Public Safety
- Cell Tower
- Movie Filming
- Building Inspections

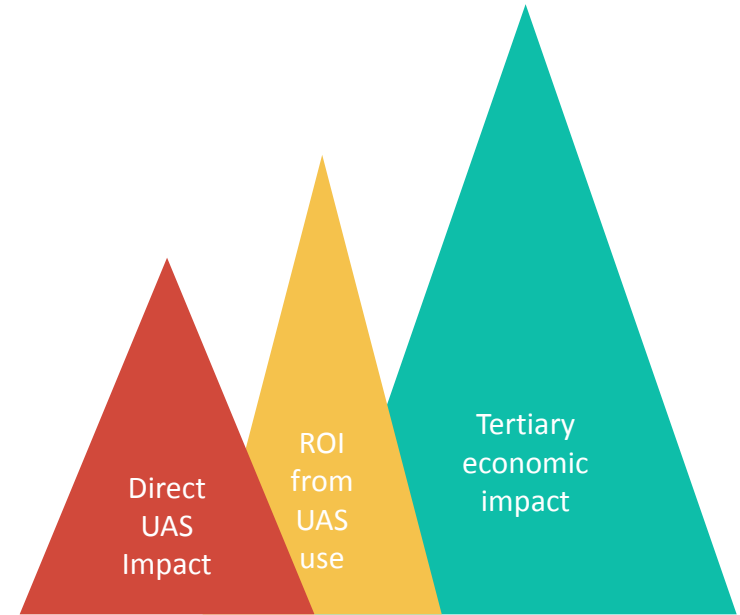


# \*Potential Value



**14B**  
\$ **Economic Impact**  
In first 3 years of full commercialization

**70K**  
 **New Jobs**  
In first 3 years of full commercialization



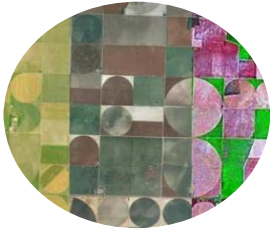
**\* Economic Impact Sources**

- Sales & Manufacturing – early impact
- ROI from use – second impact (safety, efficiency, effectiveness, input savings)
- Tertiary – longer term, harder to quantify but immense value; predictive, preventative

**Economic impact predictions only account for direct UAS activity & ROI from UAS services; tertiary impact will be significantly larger**

# \* Potential Impact

Myriad of commercial applications, primary improvements on safety, cost reduction and improved efficiency



**Agriculture**  
Increase production while reducing cost & encourages sustainability



**Logistics**  
Speed delivery, enhance tracking, improve safety, reduce cost



**Oil & Gas**  
Improve safety, reduce downtime, prevent environmental damage



**Utilities**  
Increase efficiency, improve reliability, save lives



**Development**  
Lower costs, improve planning & enforcement, improve infrastructure

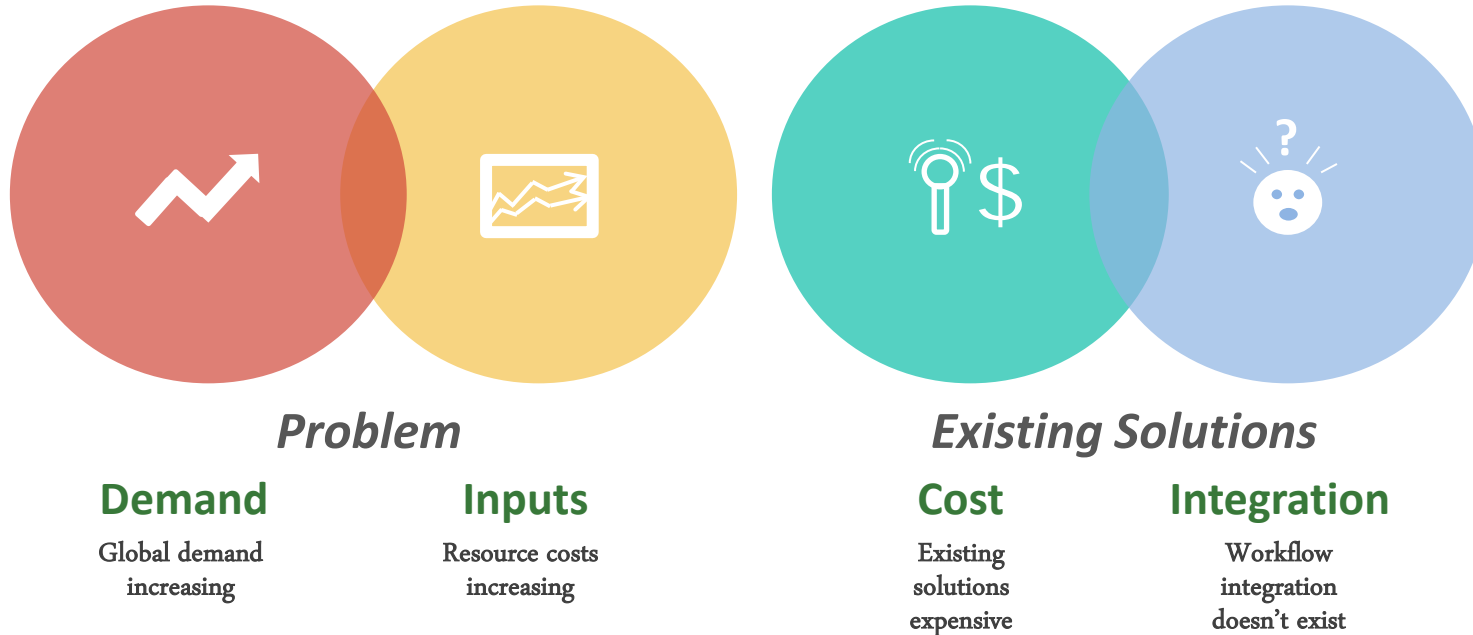


**Public Safety**  
Improve effectiveness, enhance safety, reduce cost to taxpayer



# \* Example Problem & Existing Solutions

Global agricultural output must increase by 70% by 2050



Resource constraints, pending regulatory enforcement and overall need for greater profitability will require a **radically** different approach to the Ag industry

plant health prediction

water level forecast

accurate early season yield forecast

harvest date prediction

automate all inputs

in-field QA

**We must transform agriculture from REACTIVE to PREDICTIVE**



### Long Range Yield Estimation

- Retail contracts
- Logistics contracts (transport/storage)
- Commodities contracts



### Operations Optimization

- Resource reduction
- Precision application
- Regulatory conformity
- Environmental protection



### Harvest Optimization

- Labor alignment
- Quality enhancement
- Quantity increase



### Automation

- Automated irrigation
- Environmental controls

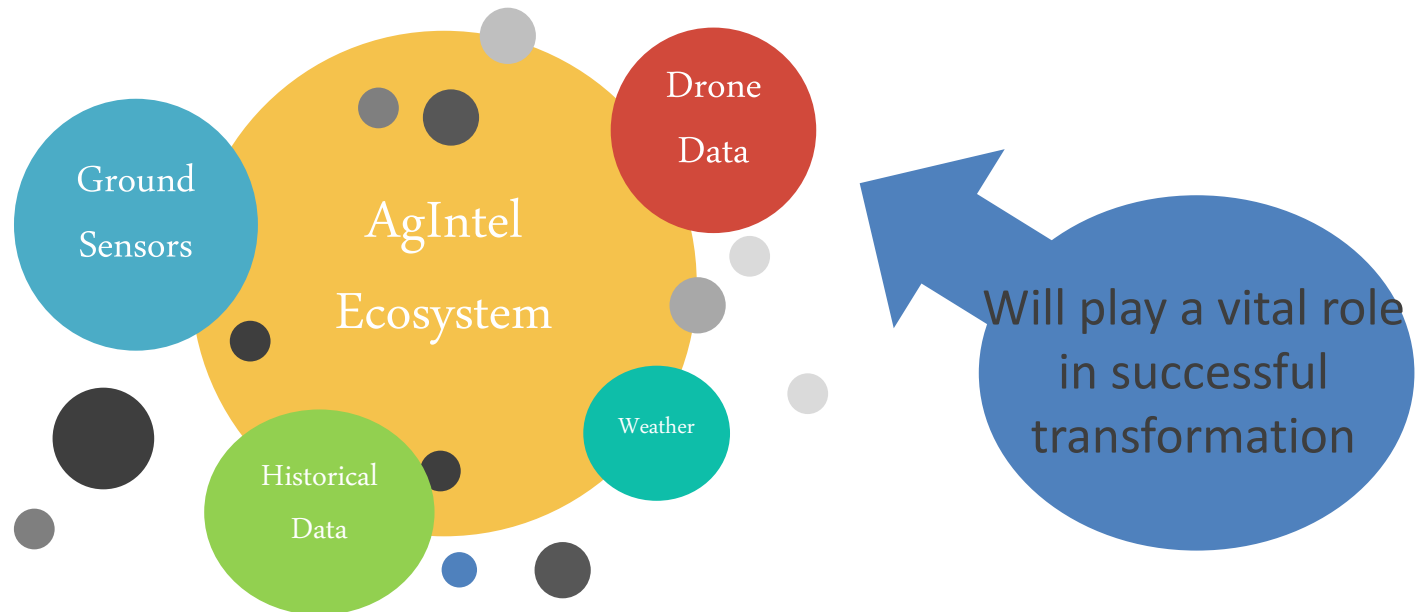
**But how do we transform an industry?**



# \* The AgriSource Solution

Encourage data-driven decision making through integration of multi-source data into predictive management solutions

- ✓ Reduce Inputs – Direct precise applications
- ✓ Improve Yield – Optimize management decisions
- ✓ Long Term Change – Make sustainable, profitable



AgIntel user interface forms core of IoT ecosystem, integrates multiple data layers and applies advanced analytics

# \* Industry Concerns

To sum it up...Uncertainty

Regulatory uncertainty sits somewhere near the top of the list

## States

Very little coordination between states, discussion with industry, or plans for future direction. These services will cross state lines, need cooperative agreements.

## Federal

Clearer since proposed rules released for comment; anticipate some changes and certain aspects must change for commercial viability (altitude, night flight, line of sight).

...but there are others as well

- ✓ Technological requirements could be burdensome
- ✓ Market adoption has been slow to date
- ✓ Defining/proving the business model is challenging
- ✓ Lack of industry standards



# \* Public Concerns

Two primary areas of concern seem to dominate public conversation

## Privacy

- Privacy laws already exist
- UAS is just a tool to carry a sensor
- Compare to renting a plane or helicopter
- Commercial companies have no reason to spy on you and many reasons not to do so
- **Legitimate Concerns**
- Right to airspace navigation vs. property owner's rights
- Unregulated/uncontrolled hobbyist activities
- Inadvertent privacy infringement

## Safety

- Loss of communication or GPS
- Flights near roadways
- Mid-air collision with manned acft
- Impeding emergency response aircraft (medevac, fire, etc.)
- **Mitigating Actions**
- Sense & avoid technology
- Operating standards/licensure
- Communication procedures
- Insurance requirements
- Common sense federal regulations\*

\*That is not a typo...however it is the only time I've ever used those words together and it's really more of encouragement not a statement of fact.



# \* Impact of UAS Legislation

**UAS technology stands to have more rapid widespread economic benefits to states' economies than any other piece of technology in the last 20 years.**

- ✓ State licensure for operations shouldn't be required, but if it is: mirror FAA guidelines and allow state-to-state cooperative agreements for interstate activity
- ✓ Singling out the technology is unnecessary; target regulations towards the unwanted activity, not the tech itself (hint: tech changes so fast you won't keep up)
- ✓ Recognize that commercial operators have financial motivation to do things the right way; highest risk comes from non-commercial sector
- ✓ UAS tech has widespread use, many we haven't even thought of yet; don't legislate what *can* be done because you WILL leave something very important out...and it will cost you
- ✓ If used properly, this tech has the ability to make an enormous environmental impact as well as economic one (**think water rights**); states should strive to be as drone friendly as possible; those who aren't will lose big



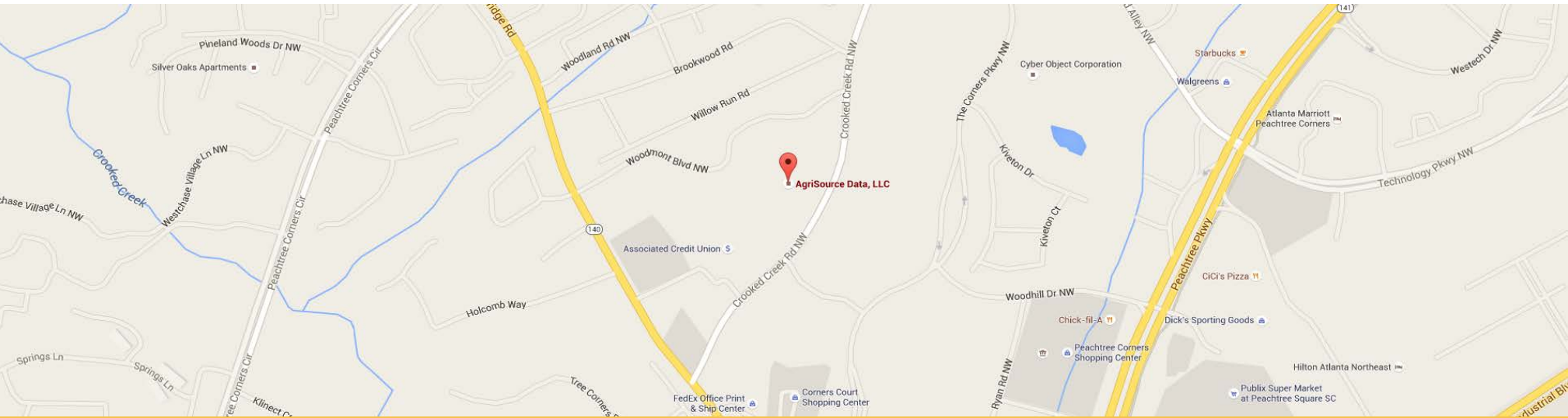
## \*big picture

*Agriculture as an industry must change radically. Data will drive that change. UAS & other AgTech will be a critical factor in making data-driven decision making the standard. Legislation must enable and support digitization and at all costs it must not hinder innovation.*



# \* Questions?

For more information visit our website at [agrisourcedata.com](http://agrisourcedata.com) or contact us directly through one of the channels below:



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