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PART 107 RULE:

IMPACT ON KEY APPLICATION SEGMENTS IN THE COMMERCIAL DRONE MARKET



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WELCOME TO

Part 107 Rule: Impact on Key Application Segments in the Commercial Drone Market



Maj Gen (ret) James Poss
CEO ISR Ideas
Exec Director ASSURE FAA
UAS Center of Excellence



Mike Hogan
Business Development
Manager
microdrones



Ben Van Lare
Operation Manager
Raecon Industries

Co-Moderator: Lori Dearman, Sr. Webinar Producer

Who's In the Audience?

A diverse audience of over 400 professionals registered from 36 countries, 35 states and provinces representing the following industries:

- 41%** GIS/Surveying
- 21%** Inspection / Utilities / Power Grid
- 14%** Transportation
- 12%** Agriculture
- 12%** Security / Monitoring / ISR



Welcome from *Inside Unmanned Systems* and *Inside GNSS*



Richard Fischer
Publisher of *Inside*
***Unmanned Systems* and**
Inside GNSS

Welcome from *the Sponsor*



Mike Dziok
Marketing Director
microdrones



Demoz Gebre-Egziabher
Aerospace Engineer and
Mechanics Faculty
University of Minnesota

Poll #1

I am interested in small UAV application for: *(Select all that apply)*

- a) Aerial mapping and survey
- b) Precision agriculture
- c) Infrastructure inspection
- d) Research and development
- e) Other

Dawn of the Commercial Drone Age?

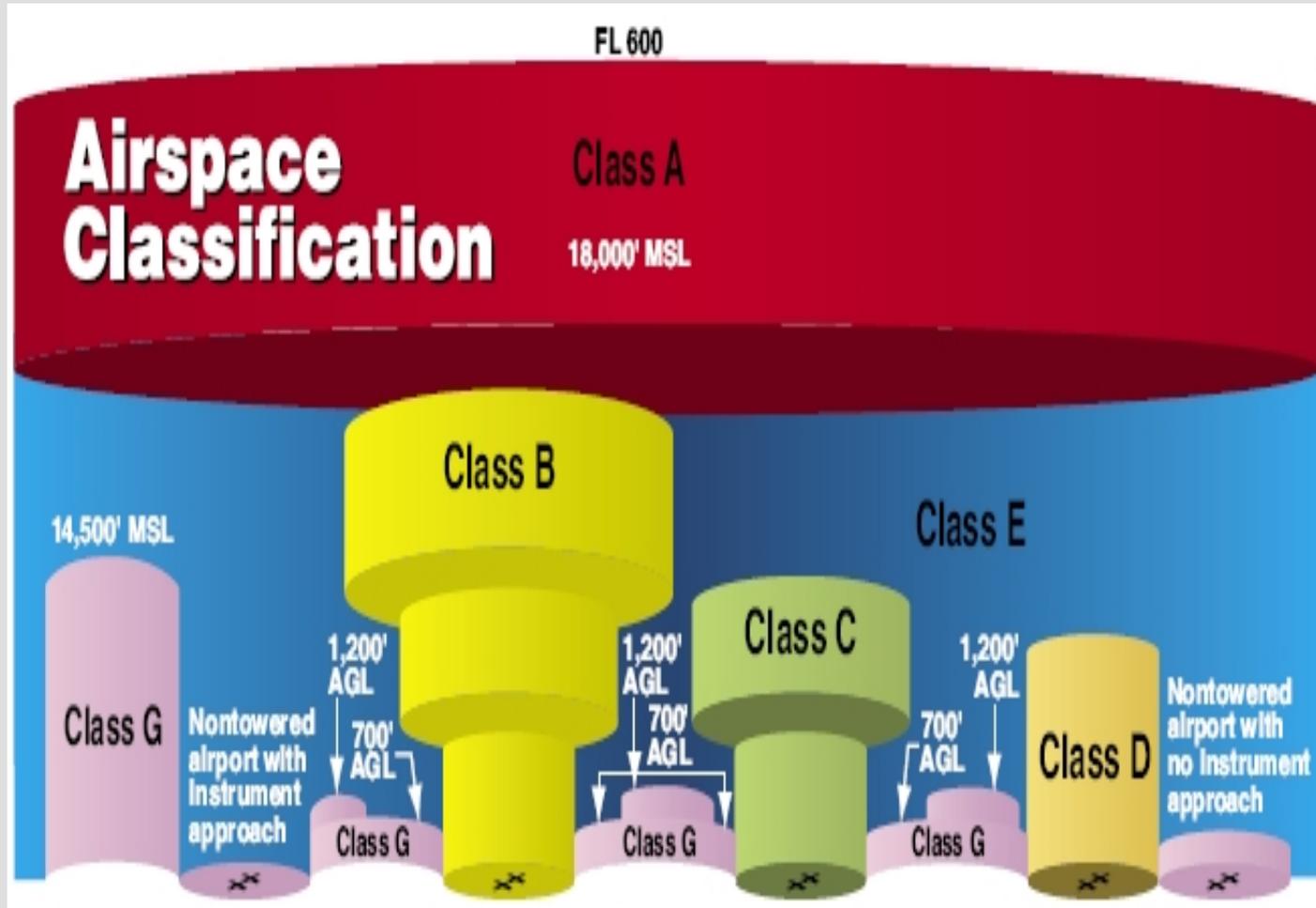
Part I



Maj Gen (ret) James Poss
CEO
ISR Ideas
WWW.ISR-Ideas.com

- Part 107 rules are out!!!!
- The basics:
 - Need a “Remote Pilot Certificate” to fly
 - Must register your UAS
 - No airworthiness standards for sUAS
 - Line of Sight operations only, but no visual observer required
 - UAV must be 55 lbs or smaller
 - No operations over people “not directly involved” in UAS operations in the open

- Part 107 con't:
 - Can't fly above 400ft AGL (except near structures) or over 87 kts
 - Day/Dusk VFR only with 3 nm visibility
 - Must report serious injuries or property damage (other than the UAS) of at least \$500
 - Operations in Class G airspace without ATC permission (huge!). Operations in Class B, C, D and E airspace need ATC approval.



- Boring, expected, predictable, foreseeable typical FAA, right?
 - All except for this section:
 - **You can request a waiver of most operational restrictions if you can show that your proposed operation can be conducted safely under a waiver.**

After 107, but before we talk about Drones

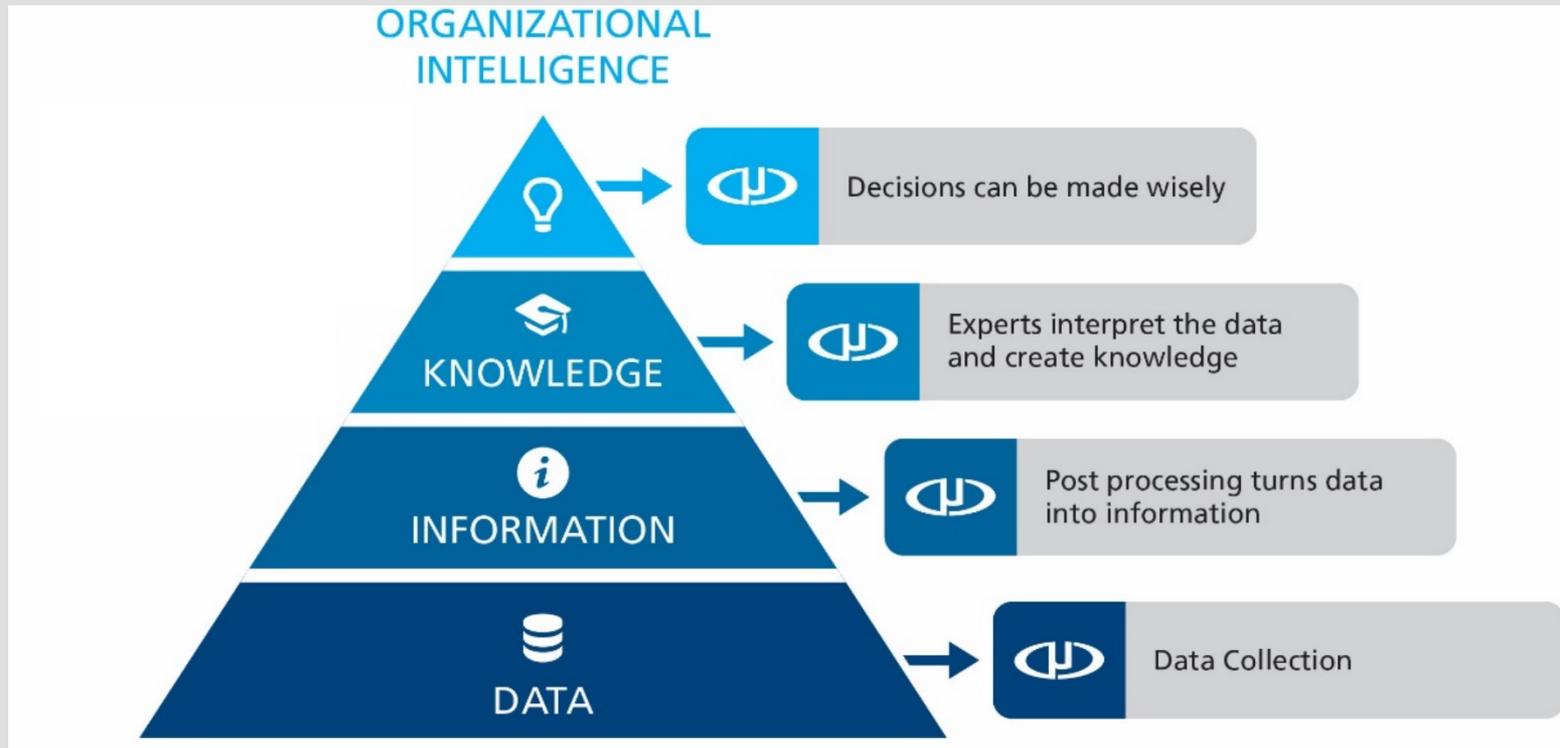


Mike Hogan
Business Development Manager
microdrones

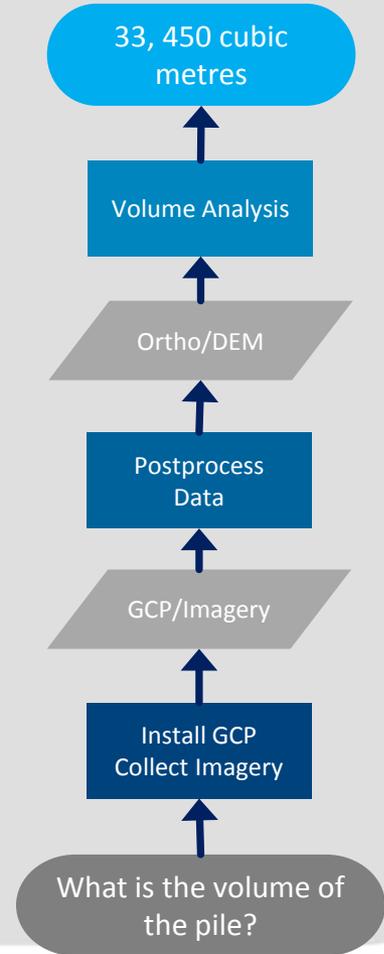
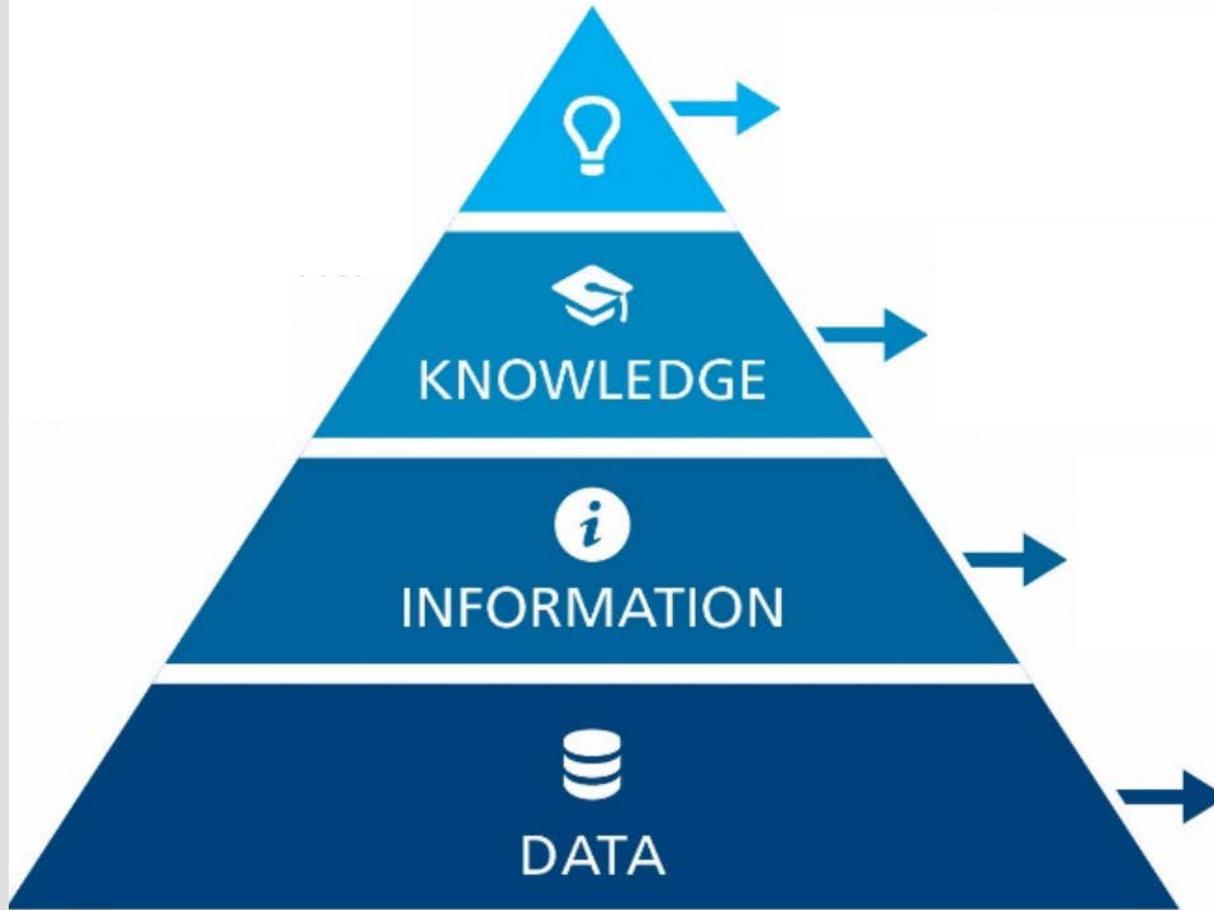
- How long can your UAV fly?
 - What is the payload capacity?
 - Does it have LiPo batteries?
 - Do you have RTK?
 - What is the accuracy of your GPS?
 - How many mega pixels does the camera have?
 - Do you have Lidar for your system?
 - And the list goes on...
-
- 90% of the time is about all about the equipment

- Regulations
- Flight operations
- What to do with the data collected
- Having existing clients/business

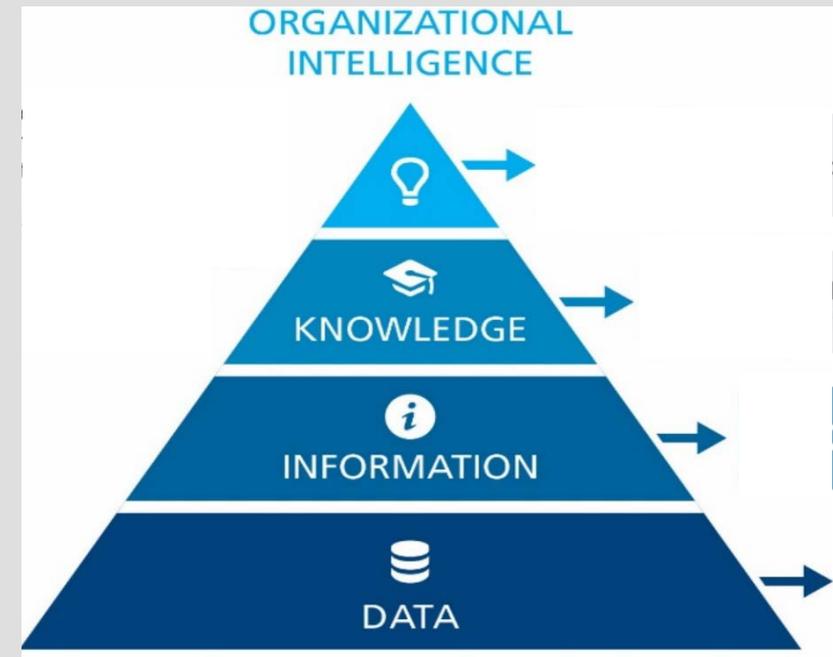
- What is the problem you are trying to solve?
 - What is the volume of that pile?
 - What is size of the crack on that blade? Is it bigger than the last time?
 - Is there rust on that pipe?
 - Is there a hot spot on that power line?
 - How large of an area do you need to map, what is the accuracy required?
- How do you currently do this (or not)?
 - Understanding this will provide insight into the advantages of using small UAS



ORGANIZATIONAL INTELLIGENCE



- Collecting data is easy, collecting quality data can be difficult
- The transformation of information into knowledge requires experts
- Typically the size of the files decreases as you go up
 - GB/TB to kB
- Each level builds on the previous
 - Garbage in garbage out
- The client is only interested in the answer and is paying for this



- Need to educate our clients
- Find your niche
- Safety
- Flexibility
- Access to your data (answers)
- Cost

Ask the Experts – Part 1



Maj Gen (ret) James Poss
CEO
ISR Ideas



Mike Hogan
Business Development
Manager
microdrones



Ben Van Lare
Operation Manager
Raecon Industries

Poll #2

With the clarity provided by part 107 a compelling case can be made for UAS operations in: (select all the apply)

- a) Aerial Mapping and Survey
- b) Powerline/Pipeline Inspection
- c) Precision Agriculture
- d) Public Safety
- e) Cargo Delivery

Utilizing UAV Technology

Future of UAV's in the Utility Sector



Ben Van Lare
Operation Manager
Raecon Industries

- UAV Flights must be operated in visual line of site at all times
- Can not be higher than 400 ft above ground level
- Weather Impact—wind, rain, snow...
- UAV battery life

- No longer does a service require extensive equipment to visually access sites
- Increases safety as no human is required to access dangerous areas
- Decrease costs by limiting use of more costly equipment (helicopters, bucket trucks, etc)
- Able to reach structures in difficult and inaccessible terrain
- Ability to work around energized structures and utilities with less human impact
- Contribute to safe infrastructure maintenance and management - QC/QM
- Better data collection
- More environmentally friendly than standard methods

- Specific operations require specific UAVs – its imperative to have the right equipment for the job
- What's Your Expertise - film, tourism, oil & gas, solar, utilities - finding your niche
- Can you use a drone to do this?



- Mission Planning
- Public Education and Notification
- Understanding the Operation–Experience in the Task
- Data Management–Privacy Concerns
- Better Data–Not just expensive photos

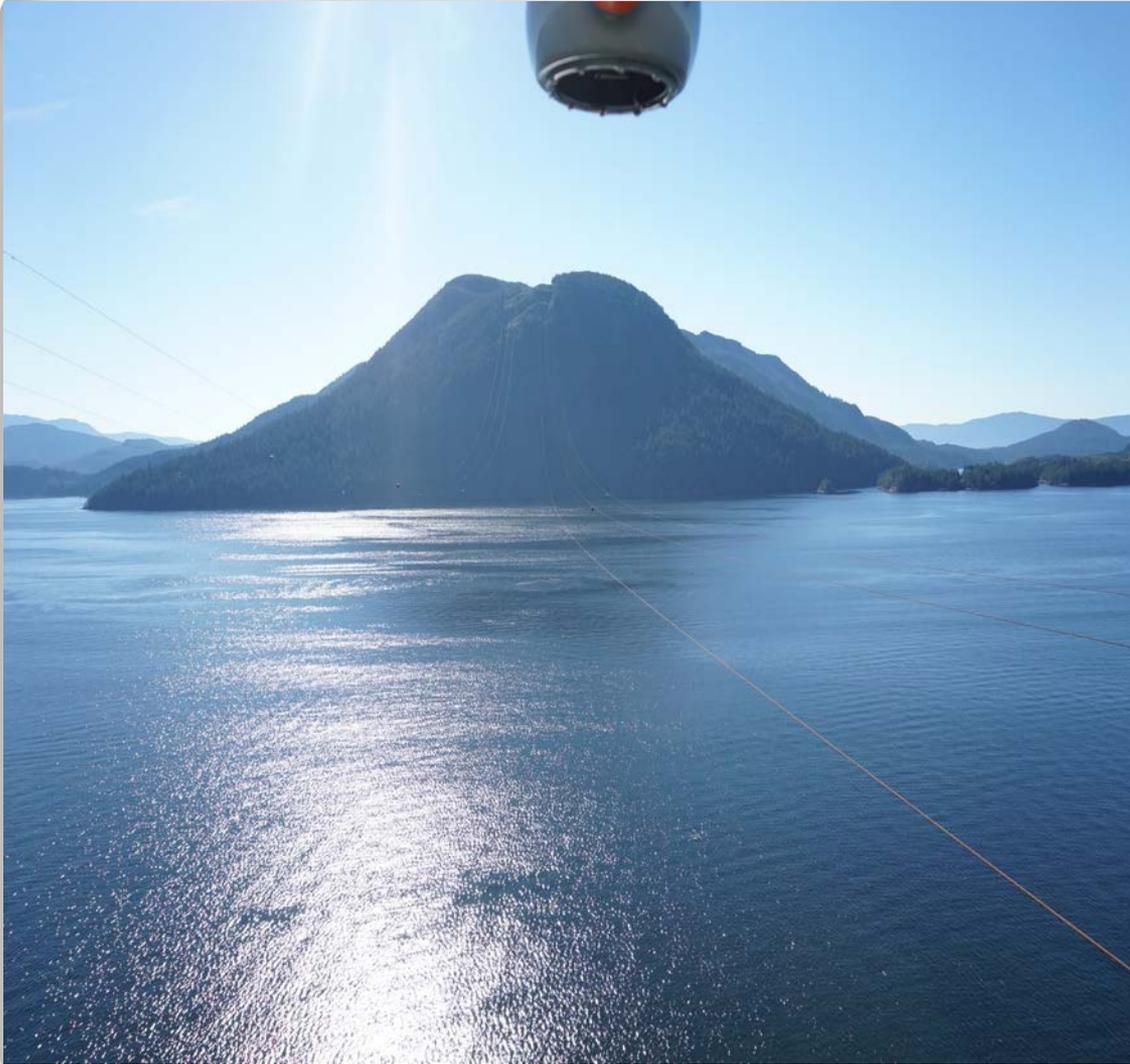
- Emergency and Hazard Inspections
 - In coordination with local authorities
- Storm Monitoring and Response
- Environmental Hazard Assessments
- Geotechnical Hazard Assessments
- Asset Hazard Assessments
- Post Disaster Evaluations
- Safety and Rescue Planning



Project Details

- Detailed inspection of 4.5km canal plinth line to inspect cracks and erosion
- Two days of flying – 8 flights of low pass and 8 flights of high pass
- Each section was shot in 25mp photos and HD Video
- Deliverable consisted of geo-referenced photos and KMZ flight plan for future inspections
- What if they didn't use a UAV?





Project Details

- 2.25 mile Long Span Transmission Conductor Inspection
- One day pre-job inspection
- One full day operation inspection – 9 flights
- Height of crossing – 1000ft in middle of crossing– 2000ft at far end
- Operation from boat and one land side
- Alternatives?





Project Details

- Detailed inspection of 14 mile Transmission Line
- 2.5 days of UAV flights
- Deliverable consisted of geo-referenced photos and GoogleEarth KMZ of structure locations
- Multiple Structures inaccessible by traditional ground inspections
- Weather conditions...



Dawn of the Commercial Drone Age?

Part II

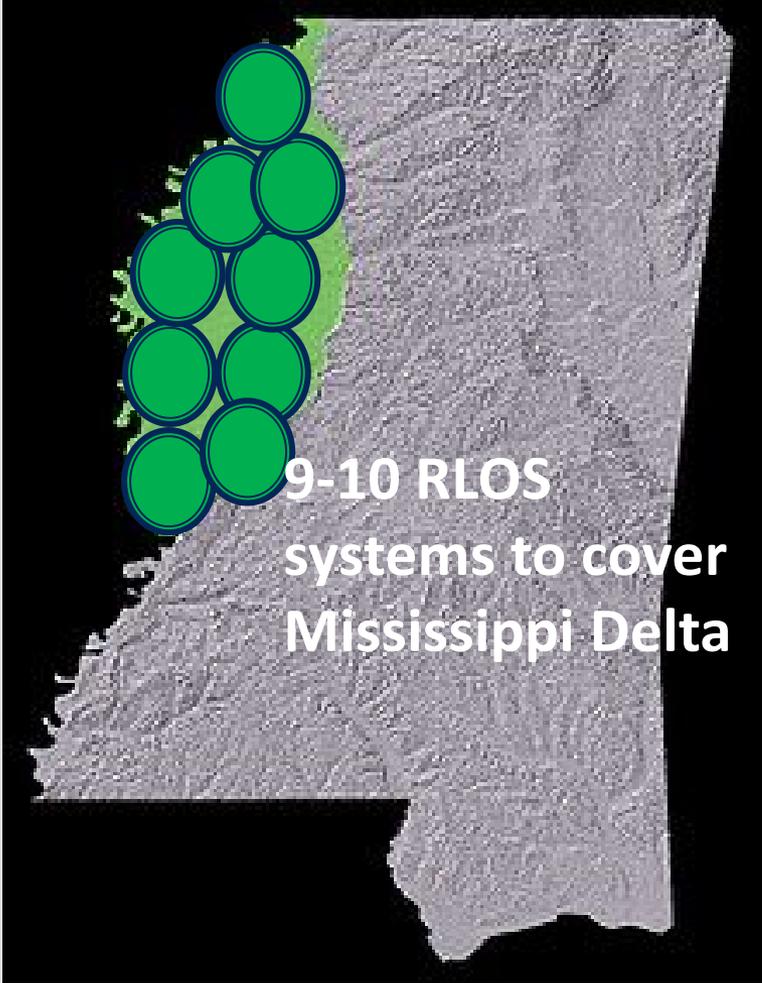
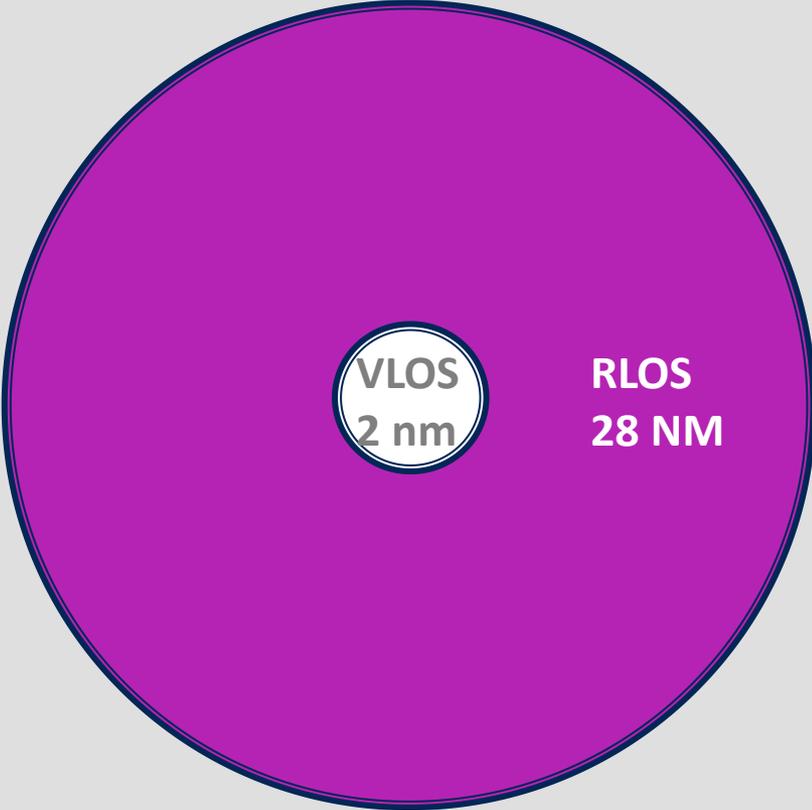


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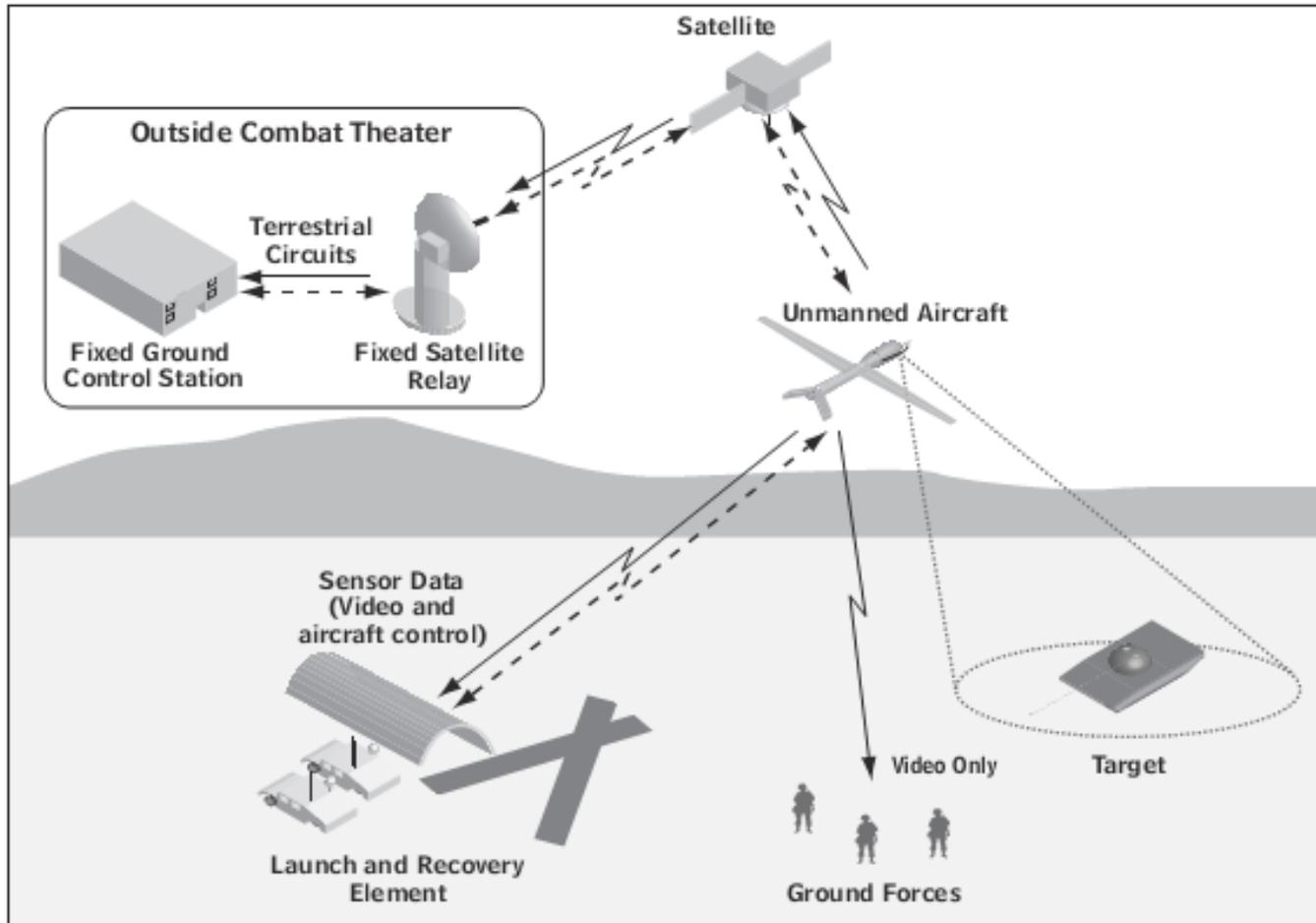
- Can waiver Part 107 for the following:
 - Daylight operation
 - Operation from a moving vehicle or aircraft.
 - Operation in certain airspace
 - Operating limitations (speed, altitude)
 - Multiple UAS ops
 - Operation over people
 - Visual line of sight aircraft ops

- Operations over people:
 - Addressed by industry group in Micro UAS Aviation Rulemaking Committee Report. Can fly over people if:
 - UAV less than 500 grams
 - UAV heavier, but with low prob. of injury
 - UAVs in closed work sites
 - UAVs with “mitigating measures” and approved hazardous operations plan
 - Industry derived standards on fast track

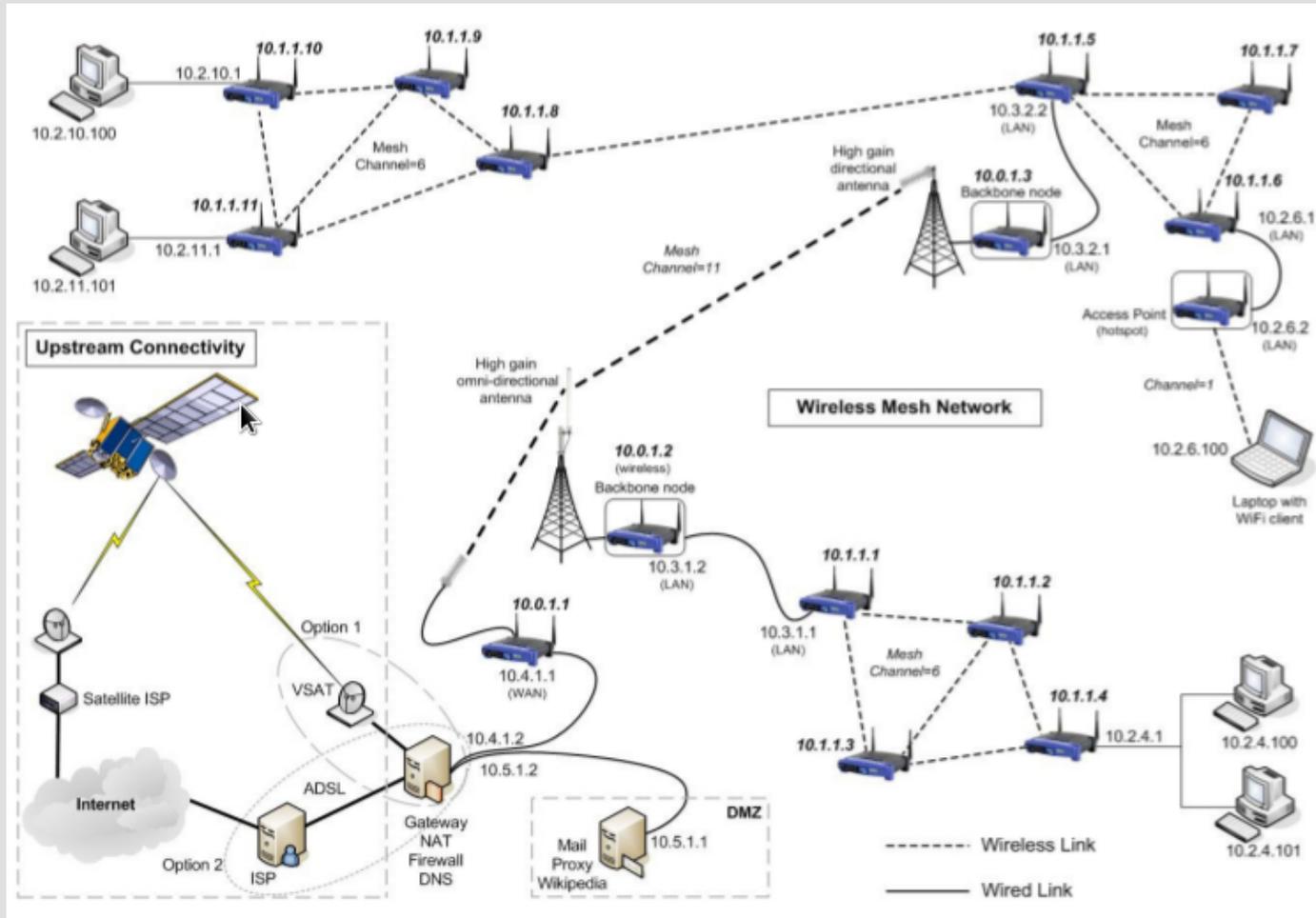
- Beyond Visual Line of Sight:
 - BVLOS needed for many missions:
 - To cover large areas (IE – Mississippi Delta)
 - For linear infrastructure (power lines, pipes)
 - For most maritime missions
 - For enterprise level info management
 - Way ahead isn't as clear as ops over people



Remote-Split Operations



BLOS: Relay links



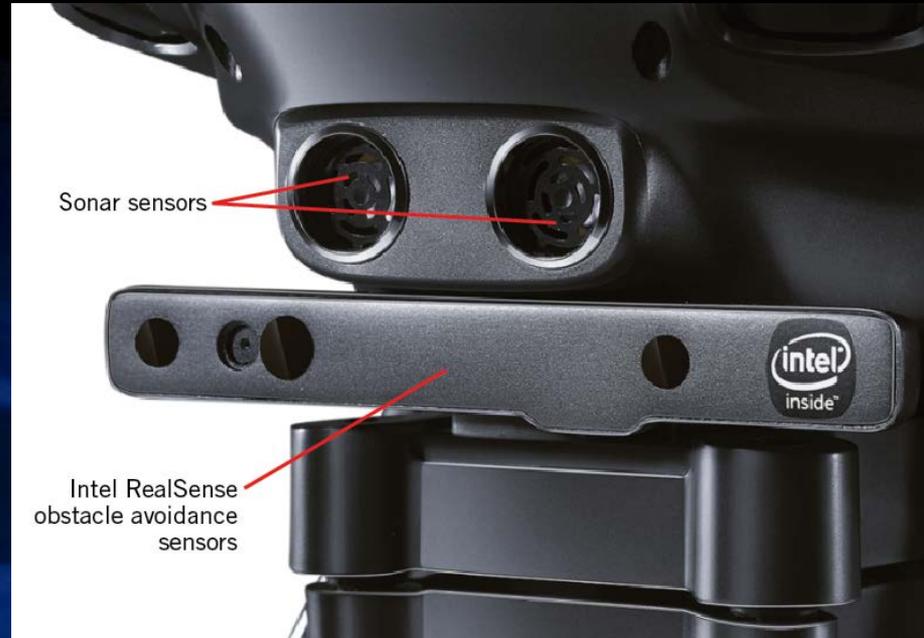


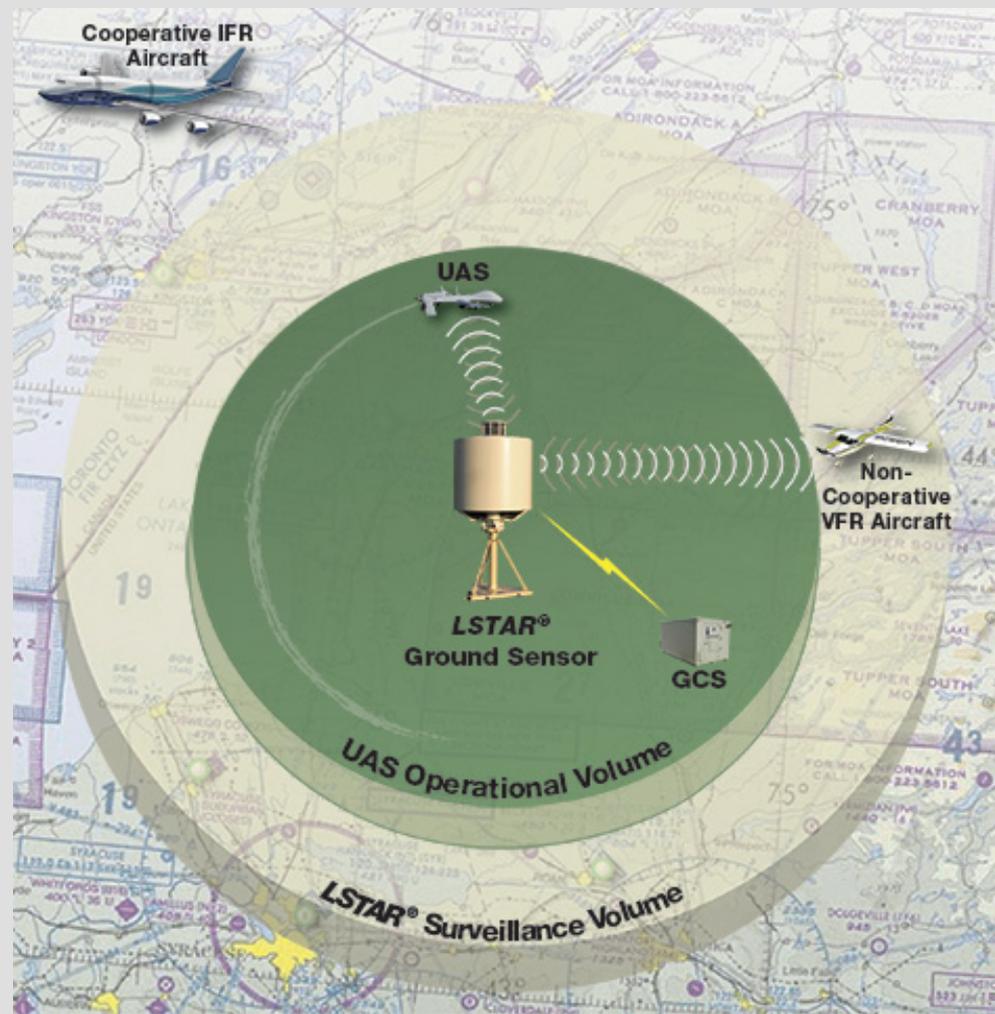
TEAM



RESEARCH FOCUS LEADS

THE DRONE REVOLUTION





Visit www.insideunmannedsystems.com

Contact Info:

Maj Gen (ret) James Poss
james@isr-ideas.com

Mike Hogan
mike.hogan@microdrones.com

Ben Van Lare
ben@raecon.ca

Poll #3

Now that FAR Part 107 is here, my organization will probably:(please select one)

- a) Start purchasing a small UAS for our work
- b) Start operating a small UAS we already have
- c) Start contracting the services of small UAS provider
- d) Start evaluating whether to use small UAS
- e) Apply for a waiver for aspects of part 107

Ask the Experts – Part 2



Maj Gen (ret) James Poss
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Mike Hogan
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microdrones



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Operation Manager
Raecon Industries

Inside Unmanned Systems @ insideunmannedsystems.com

Thank you!



inside
unmanned systems



Mike Dziok
Marketing Director
microdrones

mike.dziok@microdrones.com