Katie School of Insurance
UAV/Drone
Research Project

The Risk Management Implications of UAVs/Drones
Team Members
Project Inception

- Began spring of 2014
- Started to address concerns
- Help the developing world
- Evolved over time
Purpose and progress as of Spring 2015

- Risk Management Research in the Operation of UAVs/Drone
  - Presentations
  - Conferences
  - Networking/Shared learning
Why UAV Integration

- Between 2015-2025, $89-120 Billion in worldwide spending on UAV market
- 90% of the Potential Markets for UAV will be in public safety and precision agriculture
- Recently insurance markets
Overall

- Unmanned Aerial Vehicles give farmers and insurance companies a more accurate and timely estimate of crop and livestock losses while enabling farmers to implement best management practices.
Agricultural uses

- Weather Damage
- Pest and Weed Inhabitance
- Water resource management/sustainability
Conclusion

- Improvement of management practices
- Environmental Sustainability
- Reducing cost
- Increasing yield
NDVI
What is it?

- Normalized Difference Vegetation Index
- Plant Stress
- Early Indication of Pest or Diseases
Commercial Applications

- Public Safety, Law Enforcement, and Security
  - Ex: firefighting

- LogisticsUtilities

- Film/Photography

- Risk assessment/damage evaluation
Why use UAVs?

- Lower Cost/Investment
- Mitigates hazards
- No Time Schedule
- More Precise
Information Technology
Problems with UAV’s

- Security
- Transmission Issues
- Software/Hardware Bugs
Software Engineering

- Great concurrency
- Great error handling
- Encourages good practice
- Easy to deploy
- Fast
Encryption

- Mathematically provably secure
- Would take longer than age of universe/more power than sun will ever put out to break
- Easy to plug and go
- Computationally cheap
Network Reliability

- Resistant to packet loss
- But not too resistant
- Flexible
Client/Server Model

- Server is trusted and secure.
- Client is untrusted.
- Where to store data?
Possible Development Opportunities

• Collision Avoidance

• Computer Vision

• Autonomy

• https://www.youtube.com/watch?v=GnuQzP3gty4&feature=youtu.be&t=50
Legal Framework and Regulation
Tech Outpacing Regulatory Powers

• “Technology has advanced more in the last thirty years than in the previous two thousand. The exponential increase in advancement will only continue.

• Neils Bohr, 20th Century Physicist
Positive FAA Response

- Certificate of Authorization process for public and civil UAV operations
  - Heavily influenced by European Union
  - Systems are legally defined as “aircraft” *Huerta v. Pirker* (2014)
- Model Aircraft: Operators exempt from FAA authority if they comply with § 366 of the FAA Modernization and Reform Act
  - Cannot be used to generate revenue
  - <400 ft, <55 pounds, visual line of sight
Civil: 2 Tiers of Operations

- § 333 Exemption: “Blanket” approval for commercial operations anywhere in the country except major cities and restricted areas, 137 granted thus far
  - <200 ft, <55 pounds, Visual Line of Sight
  - Must comply with all preexisting aviation code
- Special Airworthiness Certificate: Permits R&D outside § 333 limitations
  - Recently granted to Amazon, Bell Helicopter, numerous defense and private military firms
Public (Governmental)

- Certificate of Authorization: 60 day online approval process for public institutions
  - Active for 2 years
  - Permits preapproved operations within designation area, highly flexible
  - 79 approved, including universities, police departments, and numerous federal agencies
Right to Privacy

- California v. Ciraolo (1985): Activity visible from public airspace can be surveyed by the state without a warrant.
  - Application to Private Sphere: Prior consent of surveyed parties is strongly encouraged to avoid privacy lawsuits.
Privacy Policy

• Insure only in FAA licensed operators who have a fully monitored and internally controlled privacy policy
  • Nationwide Commercial Use is Fast Approaching
  • Early Adopters/Investors Will Benefit Most
Risk Management
Insurance Considerations

- Potential underwriting assessments
  - Size, function and intent
  - Technology capabilities
  - Areas of Operation
  - Federal Aviation Administration approvals
- ISO released rules and guidelines
Specific Exposures

- Physical damage, Ground damage and Air to Air collision
- Privacy and Nuisance
- Cyber Liability
- Commercial vs Personal Use
Physical, Ground and Air to Air Collision

- Damage to UAV
- Ground Damage and falling objects
- Carrying Contents – Pollution
  - This is one of the higher exposures
  - ISO CGL Exclusions (Pollution, Aircraft, Model Aircraft)
- Air to Air collision
  - Collision Avoidance (mitigate exposure)
Privacy and Nuisance Liability

- Imaging Technology
- Loss of Use and Enjoyment (Nuisance)
Cyber Liability

- Hijacking
- Data Loss
- Data Hacking
  - Storage and disposal of data is essential for exposure mitigation
Commercial vs. Personal

- Restrictions mostly apply to Commercial
- Potential fraud/Negligence by insureds
- Potential loophole
  - Depends on companies policy language
ISO Guidelines

- “Unmanned Aircraft”
- Policy sections “Unmanned Aircraft” and “Aircraft (other than unmanned), Auto, or watercraft”
- Exclusions for Unmanned Aircraft Coverage A & B
- Scheduling form for UAVs/Drones (limited coverage)
  - Descriptions required
  - Aggregate Limit
Distribution Avenues

- Agricultural Insurers
- Commercial Insurers
- Excess & Surplus
- Specialty markets
Potential Benefits for Insurers

- Loss Control/Claims assessments
- Risk evaluation
  - Could lead to less losses
- Faster claims handling
- 3D mapping of claim area
UAV Demonstration & Questions?