

GLOBAL AEROSPACE **Service, Security, Solutions | Since 1924**

MN State, Drones Presentation September 2015

Global Aerospace Begins 1924 Spirit of St. Louis 1927 First Transatlantic flight by unmanned aircraft 1998 Dedicated Over 90 Years! TODAY

July | 2015

GLOBAL AEROSPACE **Coming to your town?**

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Overview/regulations Potential uses What is covered? Risk management

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GLOBAL AEROSPACE **Global Aerospace | A Brand Name in Aviation**

Global Leads 20% of the World's Airlines

Global Leads 50% of the World's Aerospace Manufacturers

30,000 General Aviation Aircraft currently Insured

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GLOBAL AEROSPACE **What do we bring to UAS?**

- A dedicated team
- Policy forms developed for UAS
- A commitment to safety
- The backing of some of the best in the business
- 90 years of aerospace experience



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GLOBAL AEROSPACE **Terminology**

- UAV – Unmanned Aerial Vehicle
- UAS – Unmanned Aircraft System
- RPAS – Remotely Piloted Aircraft System

System =
Platform + Payload + Ground Control Station

Drones

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GLOBAL AEROSPACE **Regulation**

Hobby and Recreation

- Advisory Circular 91-57A:
- Strictly for hobby or recreation
- Community based guidelines
- Less than 55lbs MTOW
- Give way at all times
- Minimum 5 miles from airport



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GLOBAL AEROSPACE **Regulation**



Commercial or Business

FAA Authorization needed via Section 333 approval

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GLOBAL AEROSPACE **Regulation**



Government or Public Entity

Certificate of Waiver or Authorization (COA) needed:

- Particular aircraft, particular purpose, particular area
- Defined block of airspace and time
- Broader operator requirements
- email the FAA/UAS Integration Office at 9-AJR-36-UAS@faa.gov to get started

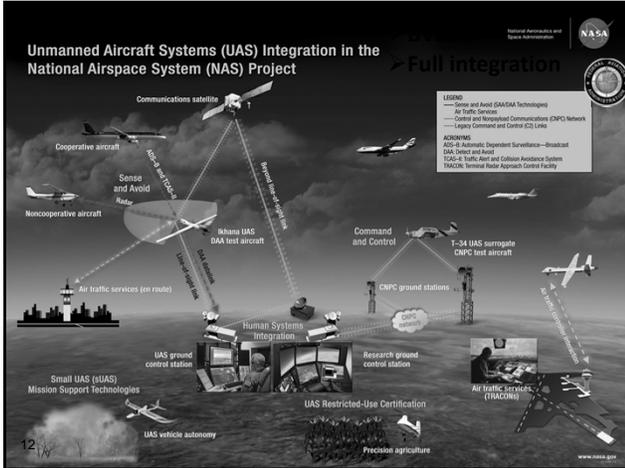
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GLOBAL AEROSPACE **Regulation – the next few years**

- Operations:
 - <55 lbs , <500 feet agl, <87 knots
 - Visual line of sight - Daylight only - 3 miles visibility
 - Restricted airspace
- Pilot / Operator:
 - Aeronautical knowledge test
 - Small UAS rating / recurrent written test every 24 months
- Aircraft Requirements:
 - No airworthiness cert required
 - All aircraft must be registered and display an N#

No insurance requirements

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Potential Market for UAS

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- **AUVSI (Association for Unmanned Vehicles Systems International)** predicts for U.S. :
 - \$83bn economic impact over next 10 years
 - 100,000 jobs
- **10% of commercial aviation unmanned by 2025?**
- **Commercial vs. Military?**
- **Payload vs. Platform?**
- **Reality vs. Fiction?**

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Potential Applications

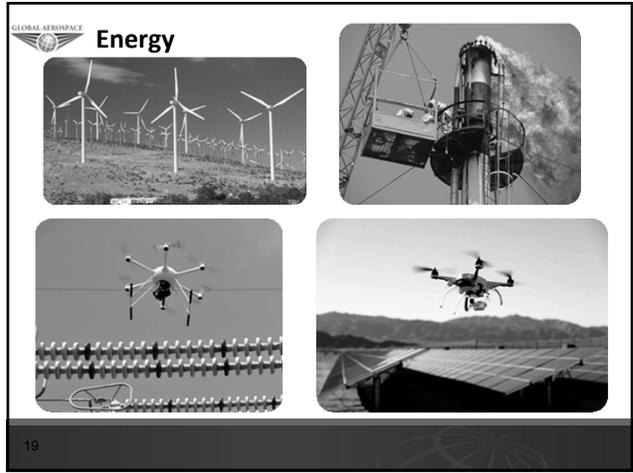
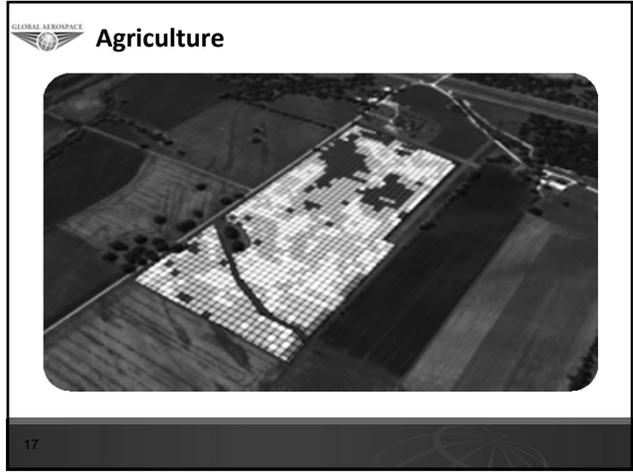
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- Agriculture
- Conservation
- Construction
- Disaster Relief
- Defense contractors / Border patrol
- Energy
- Engineering
- Entertainment / Movie / Media
- Forestry
- Forest Fire
- Insurance assessments
- Mapping / Geophysical survey
- Mining
- Municipal authorities / Police / Fire
- Parcel delivery
- Photography / Videography
- Realty
- Search and Rescue
- Security
- Sports teams
- Universities / Colleges
- Utility companies
- 3rd world medicine delivery.....

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GLOBAL AEROSPACE **Energy**



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This slide features the 'GLOBAL AEROSPACE' logo in the top left corner and the title 'Energy' in bold. The main image is a black and white aerial photograph of a long pipeline supported by a series of wooden pilings, stretching across a wide body of water. The number '20' is located in the bottom left corner of the slide's dark footer.

GLOBAL AEROSPACE **Parcel Delivery**



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This slide features the 'GLOBAL AEROSPACE' logo in the top left corner and the title 'Parcel Delivery' in bold. The main image is a collage of three black and white images: the top image shows a drone flying over a landscape with the text 'Google [x]'; the bottom left image shows an Amazon Prime Air drone on a landing pad; the bottom right image shows a drone in flight carrying a package. The number '21' is located in the bottom left corner of the slide's dark footer.

GLOBAL AEROSPACE **Fire prevention**



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This slide features the 'GLOBAL AEROSPACE' logo in the top left corner and the title 'Fire prevention' in bold. The main image is a black and white aerial photograph of a forest fire, showing thick smoke rising from the trees. The number '22' is located in the bottom left corner of the slide's dark footer.

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23

This slide features the 'GLOBAL AEROSPACE' logo in the top left corner. The main image is a black and white photograph of a large cargo plane flying through a dark, smoky sky. The number '23' is located in the bottom left corner of the slide's dark footer.

GLOBAL AEROSPACE **Fire prevention**



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This slide features the Global Aerospace logo in the top left corner. The main image shows a person in a dark shirt and pants standing next to a small, light-colored aircraft on a grassy field. The person is holding a long, thin rod or tool that is positioned near the aircraft's engine area. The background consists of a line of trees and a clear sky. The slide number '24' is located in the bottom left corner.

GLOBAL AEROSPACE **Fire support**



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This slide features the Global Aerospace logo in the top left corner. The main image shows a close-up of a fire support device, possibly a water cannon or foam applicator, being used on a structure. A large plume of white foam or water is being directed towards the structure, which appears to be a part of an aircraft or a large piece of machinery. The slide number '25' is located in the bottom left corner.

GLOBAL AEROSPACE **Survey**



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This slide features the Global Aerospace logo in the top left corner. The main image is a collage of three photographs. The top left photo shows an aerial view of a large, multi-story building complex. The top right photo shows an aerial view of a road and surrounding buildings. The bottom left photo shows a person wearing a white hard hat and a safety vest, operating a drone. The slide number '26' is located in the bottom left corner.

GLOBAL AEROSPACE **Mapping/ geophysical survey**



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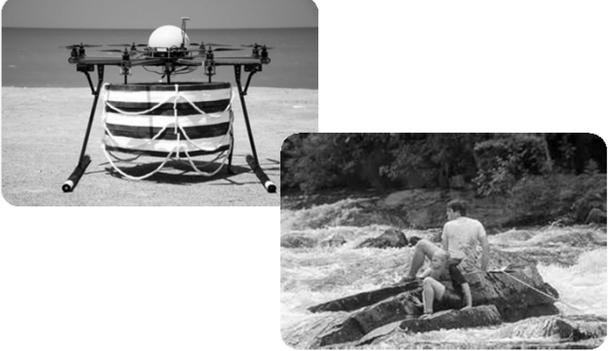
This slide features the Global Aerospace logo in the top left corner. The main image is an aerial view of a large body of water, possibly a lake or a reservoir, surrounded by dense trees and vegetation. The water is dark, and the surrounding land is lighter. The slide number '27' is located in the bottom left corner.

GLOBAL AEROSPACE **Police**



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GLOBAL AEROSPACE **Search and rescue**



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GLOBAL AEROSPACE **Search and rescue**



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GLOBAL AEROSPACE **Search and rescue**



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Third world medicine delivery

Search for "Matternet TED talk"

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The insurance market for drones

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The merger of two markets

"Its only a drone"

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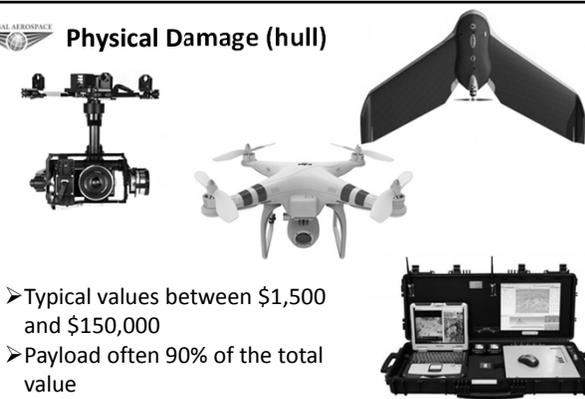
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Insurance options

- Insurance Service Office (ISO) have developed endorsements to extend General Liability policies to include drones
- Specialist Aviation Insurers have:
 - Specific policy forms
 - Dedicated loss adjusters
 - Loss control services

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GLOBAL AEROSPACE **Physical Damage (hull)**



- Typical values between \$1,500 and \$150,000
- Payload often 90% of the total value

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GLOBAL AEROSPACE **Liability to Third Parties**



- Limits from \$1m upwards
- Customers determining limits purchased

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GLOBAL AEROSPACE **War and Allied Perils**



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GLOBAL AEROSPACE **Personal Injury (Invasion of Privacy)**



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GLOBAL AEROSPACE **Product Liability**

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GLOBAL AEROSPACE **Underwriting Considerations**

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GLOBAL AEROSPACE **Risk Management**

Safety Management – UAS is an industry with some growing up to do.

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GLOBAL AEROSPACE **Risk Management**

Safety Management System?

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GLOBAL AEROSPACE **Lessons learned in blood**

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GLOBAL AEROSPACE **Lessons learned in blood**

But we have the opportunity to do better.....

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GLOBAL AEROSPACE **Risk Management**

Use of SOP

Launch and Recovery
Navigation
Launch elevation
Ceiling and visibility
Winds

UNMANNED SAFETY INSTITUTE™

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GLOBAL AEROSPACE **Risk Management**

Continuous Training and Development

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GLOBAL AEROSPACE **Risk Management**

Maintenance




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GLOBAL AEROSPACE **Risk Management**

Operating Environment



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GLOBAL AEROSPACE **The future of drone risk management**

- Geo-fencing
- Sense and Avoid
- Operator ID
- Automation
- UTM (NASA)



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Henry Ford: "If I had asked people what they wanted, they would have said faster horses"

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1901, Kitty Hawk



Rear Admiral Melville, USN said in the *North American Review*: "A calm survey ... leads the engineer to pronounce all confident prophecies at this time for future success as wholly unwarranted, if not absurd."

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Questions?



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