Standards Development to Implementation:
The Training Organization Perspective

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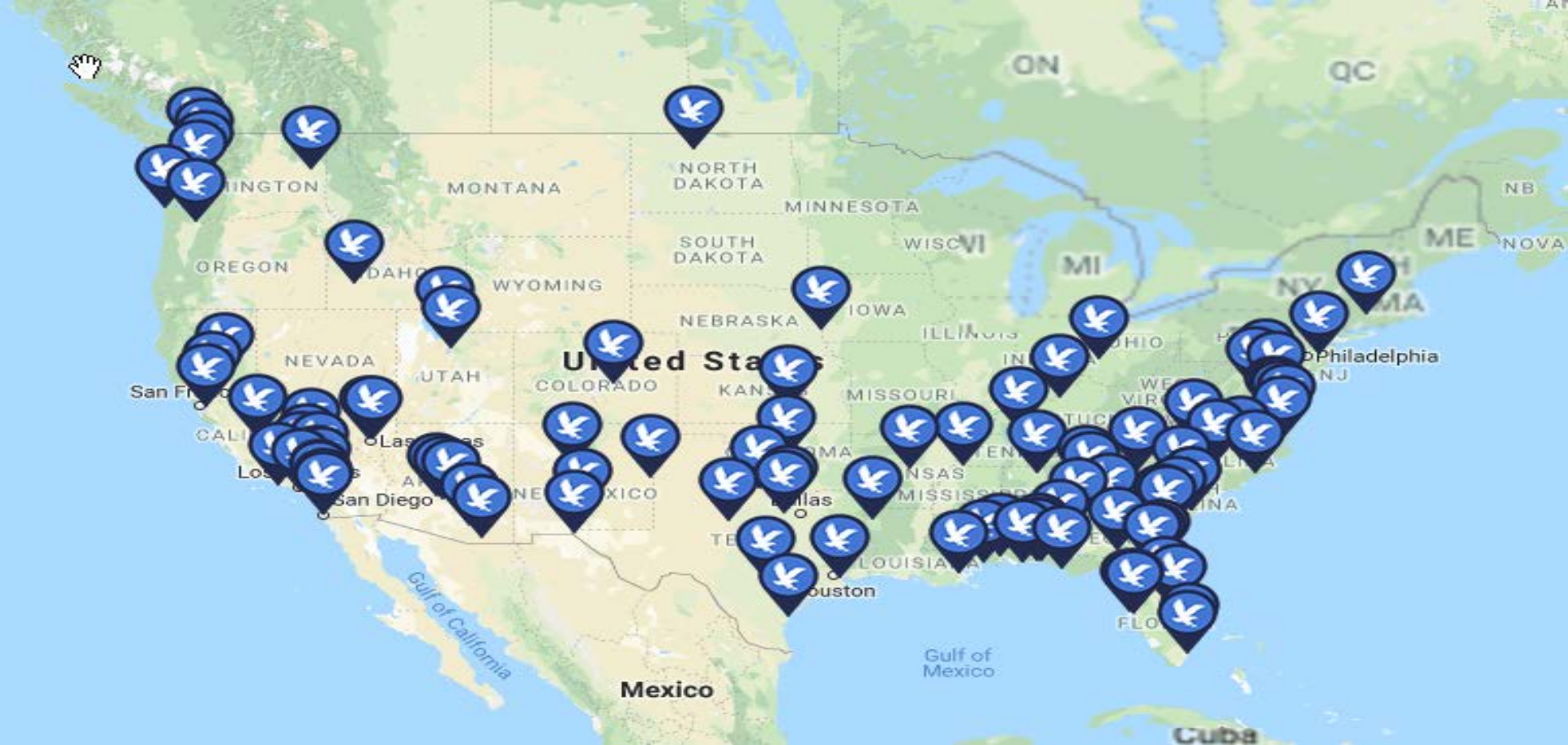Aeronautical University
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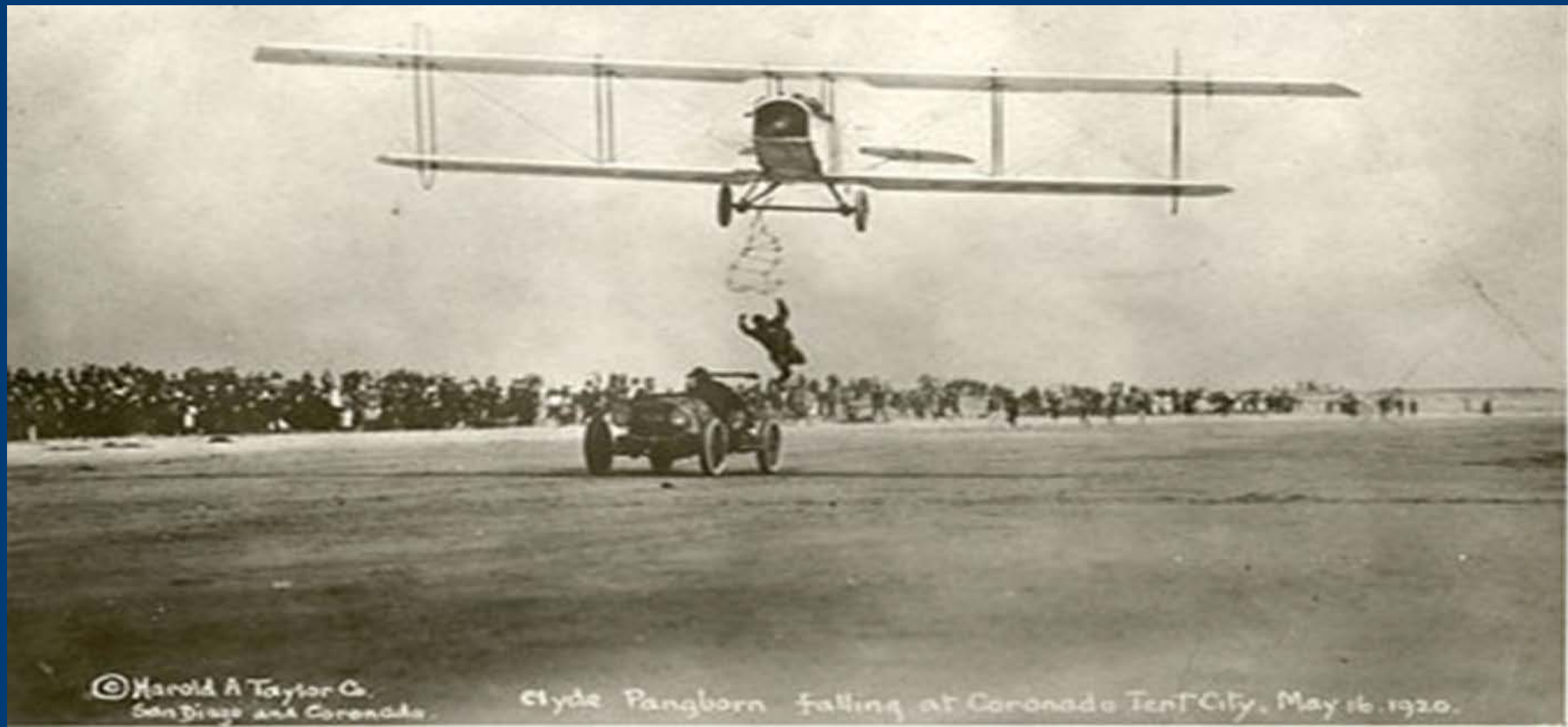Aeronautical University
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San Diego and Coronado.   Clyde Pangborn falling at Coronado Tent City. May 16, 1920.

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FAA – Part 107

- Commercial Operators
- Less than 55 pounds
- Visual line of sight
- Segregated from manned aircraft traffic
- Hobbyists do not require certification
- Commercial operators require Remote Pilot Certificate

1. Preflight Inspection
Flight Takeoff Area....................Clear view of surroundings
Aircraft Battery..............................Charged and installed

FPV Operations
Phone Battery.......................................> 50% charge
FPV Goggles...Check

Airframe
No Damage..Check
Antennas..Check
Support Arms...Check
Landing Gear...Check

Propellers
Damage/Scratches...Check
Location...........................Confirm correct positions
Tight and Secure...Check

Camera
Cover...Removed
Camera Lense...Gently clean
Check for Damage...................No cracks or scratches

Tablet/Phone
Wi-Fi Connection...Off
USB Cable...Connected

2. Power On and Pairing
Aircraft................................> 10 ft from PIC and any
                                    personnel, pointing away
Skycontroller...ON
Aircraft................................ON (5s after controller),
                                                      solid red
Controller.........................,.............Confirm green light
FreeFlightPro App..Open

3. Before Takeoff
FreeFlightPro App
Connection...Confirm
Video...Confirm
Controller Battery.................................Check > 25%

3. Before Takeoff
Aircraft Battery................................Check > 50%
Settings...As required
Geofencing...On and set
RTH Delay..Set 3 seconds
Aircraft GPS...Confirm
Controller GPS..Confirm
Aircraft Calibration.................................As required
Camera...As required

FPV Operations
Phone Device.........   Receiving Video

4. Automatic Takeoff
Area.................................Clear, announce
Left and Right........ ....Release
Controller Sticks
Takeoff/Land........... ....Press Once
Button

5. After Takeoff
Position Holding..................   ....Confirm
Aircraft Handling..................   Check movement in
                                          every axis
Camera...As required

6. Landing
Area..Clear
Aircraft...................................Hover 3 - 6 feet

Automatic Landing
Takeoff/Land........... ....Press Once
Button

7. After Landing
Propellers..............................Check Stopped
Aircraft Power...Off
Controller Power......   ....Off

Understanding TOP

- Protocol Certification Manual
- There are **two kinds** of certification
  - ○ Certification for **individuals** - (remote pilots and remote pilot instructors)
  - ○ Certification for **organizations** — (service providers)

LEVEL 1 LEVEL 2 LEVEL 3

T.O.P. OPERATOR AUVSI

Why 3 Levels of Certification?

Supporting the future of Remote Pilots

- The Level of Certification reflects the level of; **skills, qualifications, knowledge and safety protocols** that are required to operate safely in different commercial UAS industries.

LEVEL 1

Professional company using UAS; for **low-risk operations** within the baseline of 14 CFR Part 107, that does not require a waiver, however does require a **Remote pilot license.**

LEVEL 2

Commercial UAS services company; for **complex operations**, or any UAS operation that requires a **waiver under 14 CFR Part 107.**

LEVEL 3

Commercial UAS operations in **safety critical environments,** third party training providers and operations requiring a functional area certification.

Instructional Design

Competencies   Observable behaviors   Assessment   Rubric

STAGE 1		STAGE 2	
LEARNING OUTCOMES	**MODULE OBJECTIVES**	**ASSESSMENTS**	**CRITERIA**
If the desired result is for learners to:	Then you need evidence of students' ability to:	So the assessments need to include some things like:	And the assessments will be evaluated with this criteria:
Example: LO1: Analyze and evaluate the federal tax structure, tax strategies, tax law, and tax authorities.	*Example*: Discuss the components of a tax; Evaluate the basic tax formula.	*Example*: Discussions; Quizzes; Homework.	*Example*: Postings reflect understanding of readings and outside materials; proper citations; illustrate understanding through tax law evaluation and use of proper tax authority.

Instructional Design

Determine training activities and necessary resources

Module #	Title	Module Objectives	Learning Activities	Resources
Example: M1	Introduction to Taxation, Tax Law, and Tax Research	1. Analyze the structure of taxes 2. Discuss the types of taxes 3. Synthesize basic tax formulas 4. Apply tax planning strategies	• Readings • Video • Homework • Discussion • Critical Thinking Cases	• Textbook • Web Resources • Case Study Video

Where our industry was...

...and where we are going

Thank you
Merci
Gracias

谢谢

Cannot be done without exemption or waiver

- **Larger than 55 pounds Beyond Line of Sight (some waivers granted for test projects)**

- **Integration into NAS**

WHY?

"Safety Impact: RPAS is a new component of the aviation system that needs to be integrated safely into the aviation system as it is today. Licensing is an essential aspect of aviation safety."

- ICAO Amendment to Annex 1

Remote Pilot Certificate

- Current manned certificate pathway: take online course

- No current manned certificate pathway: take written Airman Knowledge Test. First issued in August 2016, valid for two years, so first renewals occurring now.

- This allows you to fly for hire as long as you: fly VLOS in daytime below 400 feet (122 m) AGL below 100 mph (161 kph) not over people not delivering cargo

- Some provisions are waiverable, most commonly requested (and granted) is night.

Gap in the certification requirement

- Hobbyists no additional rules at all, due to FAA

- No practical test or demonstration of flying skill

The Future

- **FAA's risk based approach to oversight:**
  - Kinetic energy x likelihood of failure
  - Interaction with other aircraft
- **Joint Authorities for Rulemaking of Unmanned Systems (JARUS) Specific Operations Risk Assessment (SORA) process**
- **FAA is working on changes to certification requirements now**

Risk-based approach to standards

- What, Where, When, Who?
- WHAT is the mission?
- WHERE will it take place?
- WHEN will it occur?
- WHO will be flying it?