

*Collaborating to address*

## **LOSS OF CONTROL IN-FLIGHT**

Upset Prevention and Recovery Training Workshop



Lou Nemeth, CAE

Module 2 – Day 1

# **UPRT in FSTDs and Aeroplanes**

# Overview

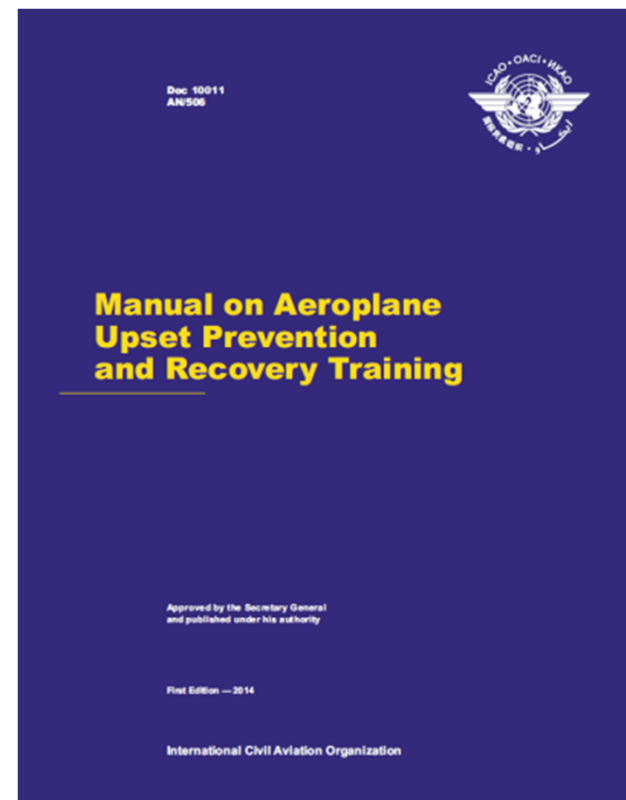
- Navigating the Manual
- Core Resource Requirements
  - Platforms and Mediums
  - Human and Technical Requirements
- High-level ATO Impact
  - Flight Schools
  - Airline Training Providers
  - Integrated Programs



# ICAO Manual on AUPRT

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- In development since 2009
  - Royal Aeronautical Society's ICATEE
  - 40 Organizations
  - 80 Members
  - 16 WG Meetings
- 2012: ICATEE, FAA, EASA and ICAO combined efforts (7 meetings)
  - LOCART
- Diversity of organizations including CAAs, OEMs and SMEs.



## Navigating ATO Relevant Sections

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- Entire Manual: High level Resource
- Chapter 3: Aeroplane Training
  - SMS: airplanes, ops, maneuvers and instructors
- Chapter 4: FSTD Fidelity Requirements
- Chapter 5: UPRT Instructors
  - Academic / On-aeroplane / FSTD
- Chapter 6: Regulator Oversight

## 6. Regulatory Oversight

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- Competency Based Training Preferred
  - Targeted competencies vs. events
- SMS
  - On-aeroplane maneuvering and aeroplane certification
  - Instructor competence
  - Avert negative training (includes sim fidelity)
- QA and SMS Evaluations
  - Approval process
  - Sustainable outcomes
  - Graduated UPRT integration options
- Approval and On-going Surveillance

## Considerations when developing UPRT regulations

- Consider implementing a UPRT requirement for the issue of a new CPL
  - On-aeroplane UPRT requires:
    - Fit-for-purpose aeroplanes;
    - Specially trained instructors;
    - The ATO to ensure that the programme is designed to monitor and mitigate the risk of loss of control.
- Strongly recommended for Core SMEs, FSTD Instructors, CPL; required for MPL.**

# On-aeroplane UPRT requires:

- Fit-for-purpose aeroplanes:
- Specially trained instructors:
- The ATO to ensure that the training is effective, and to monitor and mitigate any risks.

Strongly recommended for Core SMEs, FSTD Instructors, CPL; required for MPL.

## Considerations when developing UPRT regulations

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- UPRT conducted in FSTD requires :
  - Qualified FSTDs for the training tasks;
  - FSTD software updates for instructor tools and select training tasks;
  - Instructors to understand the limitations of the FSTDs and have experience using the necessary training tools (see Doc 9625);
  - The regulator to have inspectors trained and qualified to provide adequate oversight of the UPRT programme.

# Overview

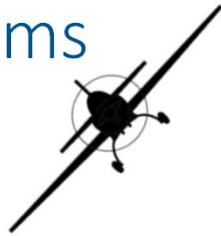
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# Core UPRT Resource Requirements

## Platforms & Mediums



- Academic Delivery
  - Distance learning
  - Live instructor-led
- On-Aeroplane
  - Aerobatics
  - Upset Prevention and Recovery Program

## Human & Technical Resources

- Core Instructor
  - Compliant with ICAO and resulting CAA guidance
  - Transferrable and complementary to future UPRT
- SMS



**On Aircraft training strongly recommended for Core SMEs, FSTD Instructors, CPL; required for MPL.**

# Academic Delivery

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- Web-based
  - Internet accessible
  - Inter-browser compatible
  - LMS
    - Track activity
    - Record results (optional)
- Tablet solutions
  - Potentially web-disconnected
  - Tracking
- Live instructor-led
  - *More later on ground UPRT instructors...*

# On-Aeroplane Platform

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- Aerobatic capable
  - Availability
  - Expanded all-attitude training
  - Positively transferrable training
- Non-aerobatic capable
  - Normal vs. utility category
  - Maneuvering limitations



## Slide 11

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**Gu1**

What about Normal vs. Utility?, Is it vs., or is the point the same for Normal and/or Utility?

Guest, 9/12/2014

## Why use a real aeroplane? (Part 1)



## Why use a real aeroplane? (Part 2)

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# Simulators

- Motion vs. non-motion
- Fidelity requirements
- Enhancements
  - Flight envelope for full stall training
  - Instructor operating station



## Slide 14

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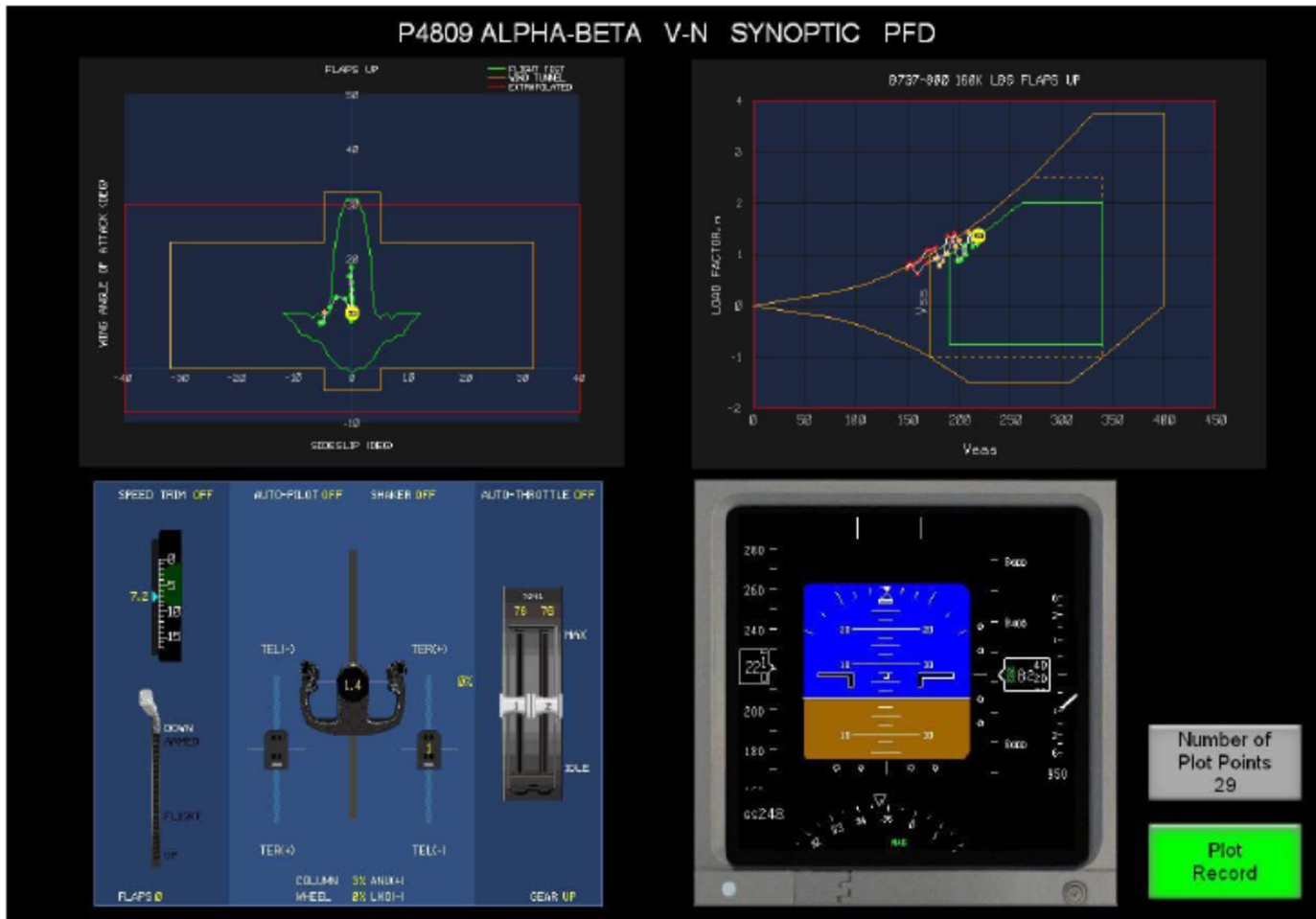
**Gu2**

Curious what our take is on the Motion/Non-Motion debate. This one is an emotionally charged issue for some people.

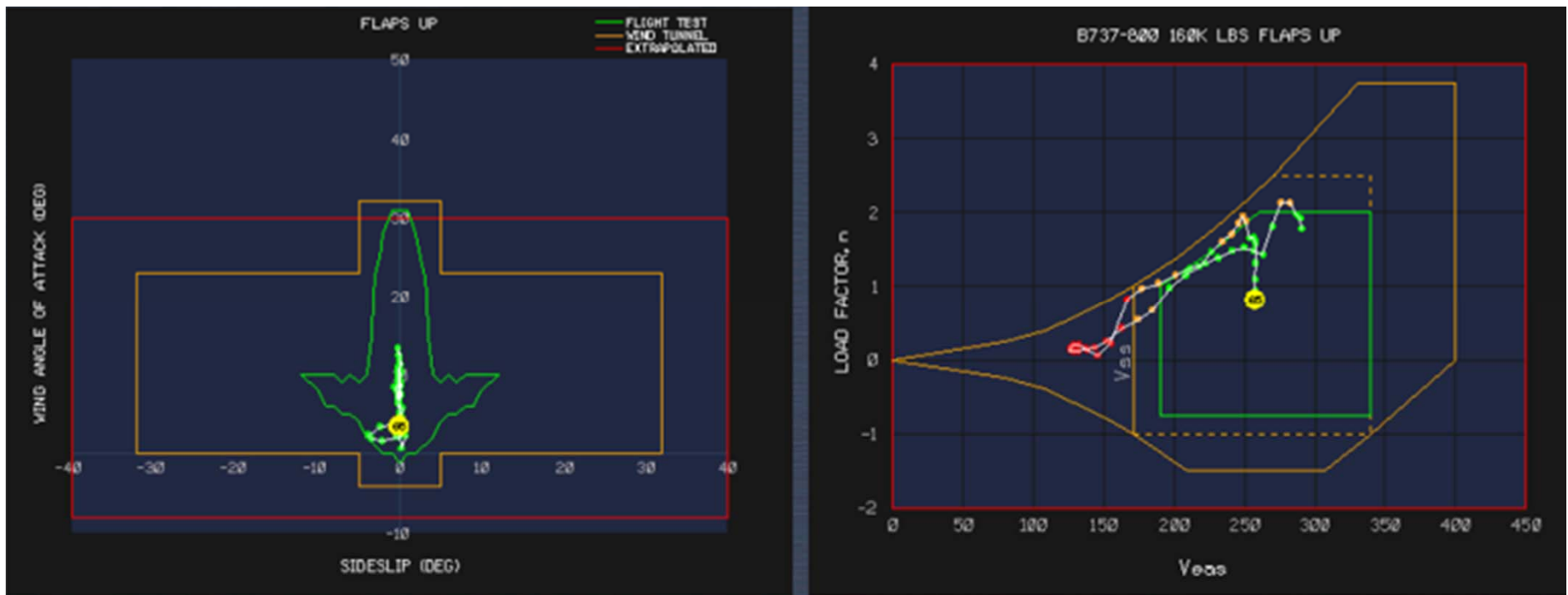
Guest, 9/12/2014



# IOS VTE Depictions (Part 1)



## IOS VTE Depictions (Part 2)



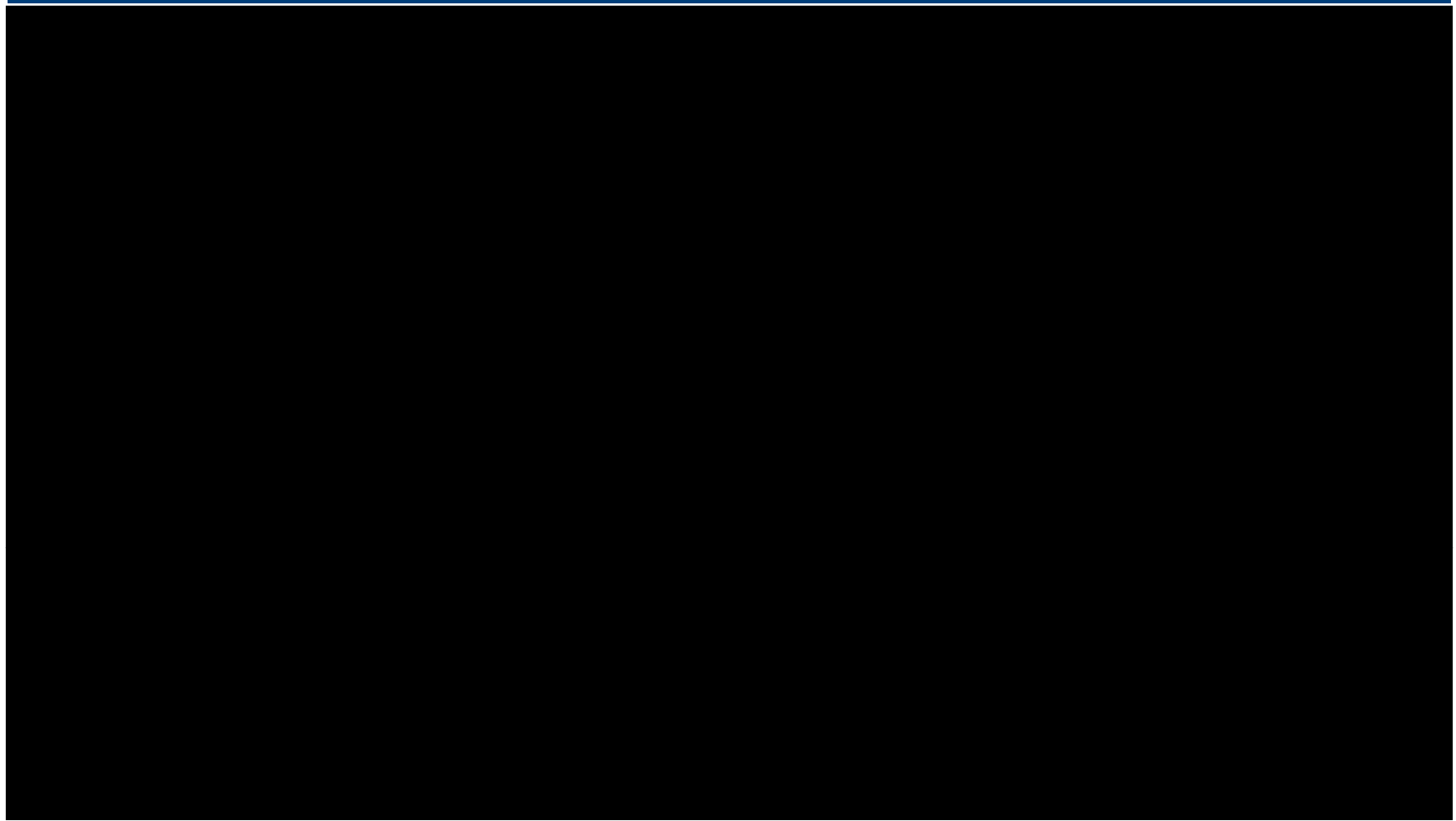
# Misuse of rudder during a Wake Turbulence encounter (2 videos)

- One video is the flight crew recovery:
  - A/P OFF
  - Manual stick inputs oscillating side to side at max amplitude
  - Big rudder inputs with reversions (sideslips > 9 deg)
  - Many occupants wounded – exceeds structural load limit
- Second video has 2 animations showing both:
  - Flight crew recovery – same as previous video
  - Superimposed A/P recovery if left on (reconstruction)
- Available in **Rev 3 Airplane Upset Prev & Recovery T.A.**

## Contrasting Aeroplane & Simulator (Part 1)



## Contrasting Aeroplane & Simulator (Part 2)



# Qualified UPRT Instructor

- The most crucial part of UPRT delivery
  - Experience level
  - Positive rather than negative training (baseline)
  - Averting negative transfer of training (much more difficult to accomplish)
  - Qualifying requirements
    - Specialized knowledge
    - Specialized skills
    - Error analysis
- Ground vs. FSTD vs. on-aeroplane



## Slide 20

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**Gu3**

I know what the issues are re: Ground/Sim/On-aircraft IPs, but I would be interested in hearing how you describe these qualification requirements.

Guest, 9/12/2014

# Instructor Training Example

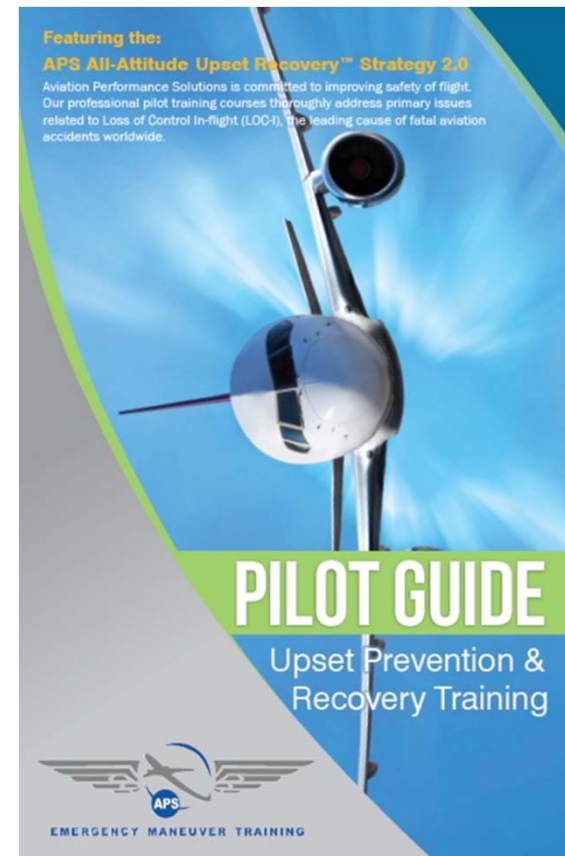
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# Training Program

- Compliance with ICAO and resulting CAA guidance
- Transferrable and complementary to future UPRT



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  - Integrated programs

# On-Aeroplane ATO Impact

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- Approved program
- Appropriate training platform
- Qualified instructors
- SMS



# Airline Training Impact

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- Approved training program;
- Appropriate FSTD platforms for the training tasks, with instructor tools
- Qualified instructors



# Integrated Programmes

- Example: MPL
  - Phase 1 / 2
    - On-Aeroplane UPRT
  - Phase 3 / 4
    - Multi-crew environment
    - Non-type specific UPRT, and/or
    - Type specific UPRT



## Take-home messages

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- A comprehensive approach to the implementation of UPRT using a mix of ground school, on-aeroplane and FSTD training is necessary
  - It should be supported by SMEs
- In different States, the optimum mix will vary according to regional context, experience and resources
- Using inadequately qualified personnel (instructors & course developers) increases the risk of getting this wrong