FLIGHT SIMULATOR TRAINING DEVICE
REGULATIONS & ICAO 9625

Mark Dransfield
FRAeS, CEng
Chairman Training Devices Workstream,
International Pilot Training Consortium
27 Into 7 Equals 9625 – The New Regulatory Matrix

Get ready to delete Level D and PTD Level 4-plus and FNPT II from your customer proposal vocabulary. The world of civil aviation training regulations is harmonizing to a simpler tune, writes Rick Adams. The upshot will be better business.

RAeS International Working Group (IWG)

WATS 2009 Briefing

(Time to use it, or lose it!)

WATS April 2009
An $10m industry effort to harmonize the technical requirements for FSTDs and how they might be used in flight crew member training based on a detailed training task analysis.

- Analysed all the training tasks required to be performed from EASA/ICAO/FAA training task lists.
  - MPL1,2,3,4: Multi-crew Pilot License
  - IR: Initial Instrument Rating
  - PPL: Private Pilots License
  - CPL: Commercial Pilots License
  - CR: Class Rating
  - TR: Type Rating
  - RL: Recurrent License (Training & Checking)
  - RO: Recurrent Operator (Training & Checking)
  - Re: Recency (Take-off and Landing)
  - CQ: Continuing Qualification
  - IO: Initial Operator

Agreed list of simulation features elements required to support an individual training task.
### ICAO 9625 EDITION 3 - RESULT 2009

#### Current

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<th>EASA</th>
<th>ICAO</th>
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#### ICAO Propose

- I
- II
- III
- IV
- V
- VI
- VII

**IWG From 20+ to 7 FSTD Types**
# ICAO 9625 - SUMMARY MATRIX (FSTD DNA)

## FSTD Simulation Features (12)

<table>
<thead>
<tr>
<th>Licence or type of training</th>
<th>ICAO FSTD</th>
<th>T/TP</th>
<th>Cockpit Layout &amp; Structure</th>
<th>Flight model (Aero &amp; engine)</th>
<th>Ground Handling</th>
<th>A/C Systems</th>
<th>Flight controls and forces</th>
<th>Sound Cue</th>
<th>Visual Cue</th>
<th>Motion Cue</th>
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<td>N(S)</td>
<td>N(S)</td>
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</table>

### Training Types (14)

- MFL4 - Advanced
- TR+ATPL
- RD+IO+IQ
- MPL3 - Intermediate
- ATPL/TR10/RO/RL
- MPL2 - Basic
- CR
- IR
- CPL
- MPL1 - Core flying skills
- PPL

### Harmonized

7 Device Examples
Globally Harmonized FSTD & Pilot Training Standards
or
Just Wishful Thinking?

Mark Dransfield FRAeS
Senior Director Business Development & Strategy
Mechtronix Systems, an MWC Company

Chairman 2011 -2013
Royal Aeronautical Society Flight Simulation Group

March 9th, 2011
ICAO 9625 Edition 3 provides...

- A means to evaluate any age/type of FSTD
  - based on its ability to support the desired training tasks
  - not based on outdated FSTD technology standards

- An industry agreed baseline for worldwide NAA adoption for the qualification of Flight Simulation Training Devices
EATS 2015 – WHERE HAVE WE GOT TO?

The International Pilot Training Consortium
IPTC & ICAO 9625 Update

* IPTC outcomes are intentionally driven by the expertise of more than 140 global SMEs, 200 observers, and 14 Associate Members; supported by relevant data
EATS 2015 - STATUS OF 9625 EDITION 3 ADOPTION

- Simulator manufacturers
  - Building FSTDs to comply with it (FFS and FTD)

- Aircraft OEMs
  - Data package licensing and pricing based upon 9625 FSTD types

- Airlines & Training Centres
  - Frequently reference 9625 in FSTD Request For Proposal documents
  - Also calling for MPL / Evidence Based Training / UPRT / SATCE compliance (all covered in ICAO 9625)

- Regulators
  - IT STILL HASN’T YET HAPPENED with FAA / EASA...
  - Only Singapore CAAS has fully adopted ICAO 9625 Edition 3
EATS 2015 –
WHY THE LACK OF REGULATORY ADOPTION OF ICAO 9625?

• FAA
  - Colgan aftermath
  - Aligning Part 60 Level D FFS with 9625 Edition 3 Level VII

• EASA
  - Resource issues
  - Basic rule language/terminology & FCL / OPS alignment
  - Aligning CS-FSTD A Level D with 9625 Edition 3 Level VII as part of 2015 rule making plan

• Russia
  - Yes / No / Yes / No/ ..... 

• Australia
  - Very keen to use 9625 especially for Low Level devices becoming prolific

• Rest of World
  - Usually wait and follow EASA / FAA lead
**EATS 2015 – WHY THE LACK OF REGULATORY ADOPTION OF ICAO 9625?**

But States, not ICAO, impose aviation **law**

...and the State Adoption Rate for ICAO SARPS & training guidance is poor:-

<table>
<thead>
<tr>
<th>ICAO Doc publication date</th>
<th>Interval since publication</th>
<th>ICAO Doc</th>
<th>Subject</th>
<th>States rate of adoption or recommendation to operators</th>
<th>Remarks</th>
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<tbody>
<tr>
<td>2006</td>
<td>9 years</td>
<td>9841</td>
<td>Approval - FTOs / ATOs</td>
<td>&gt;50%</td>
<td>Estimated</td>
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<tr>
<td>2006</td>
<td>9 years</td>
<td>9868</td>
<td>Training - MPL</td>
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<td>32 States in EAMS</td>
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<td>2009</td>
<td>6 years</td>
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<td>2012</td>
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<td>2014</td>
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<td>10011</td>
<td>Upset Prevention &amp; Recovery</td>
<td>&lt;2%</td>
<td>Consensus needed</td>
</tr>
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</table>

Is this in the spirit of the Chicago Convention?
ICAO 9625 – IN HINDSIGHT...

• We took a big leap in Edition 3
  – We referenced all FSTD requirements back to training rather than existing FSTD regulatory standards
  – We covered all levels of training from ab-initio upwards and therefore all levels and types of devices (not just FFS) as per first two editions of ICAO 9625

• We missed a trick at the publication of ICAO 9625 Edition 3
  – Everyone accepts that Level D / Type VII FFS capabilities and regulation is well understood and harmonised.
  – But we should have
    • generated a gap analysis between 9625 Edition 3 and FAA and EASA FSTD documents to make comparison easier
    • described all the current FAA and EASA types of FSTD from FFS to the lowest level of device in terms of the 9625 matrix FSTD DNA approach
# ICAO 9625 – GAP ANALYSIS WITH CURRENT STANDARDS

<table>
<thead>
<tr>
<th>DEVICE TYPE</th>
<th>Licence or type of training</th>
<th>Device Feature</th>
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<td>Type V</td>
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<td>T</td>
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<tr>
<td>Type IV</td>
<td>MPL2 - Basic</td>
<td>T+TP</td>
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<tr>
<td>Type III</td>
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Use 9625 to determine applicable training tasks
OBJECTIVES

• Completing ICAO 9625 matrix for all FAA / EASA FSTD levels based on exiting EASA and FAA FSTD general requirements
  – Especially for lower level devices

• Continues to develop and encourage industry adoption of ICAO Doc 9625 with 2 key proposals
  – Align FFS Level D standards with those in ICAO 9625 Edition 4 Type VII (FFS).....
  – Permit lower level device qualifications using ICAO 9625 to define FSTD criteria based on training tasks / needs desired to be accomplished as Alternate (Acceptable) Means of Compliance.
WATS 2015 – AND NOW FOR SOME GOOD NEWS!!!

* 9625 Edition 4 has been published and is available through ICAO

- **ICATEE / UPRT**
  - Guidance material for qualification of FSTDs for upset prevention and recovery training (UPRT) introduced in accordance with ICAO Doc 10011.

- **SATCE / ARINC439**
  - Updated simulated air traffic control environment related material which aligns with ARINC provisions;

- **Motion**
  - Updated objective motion cueing tests to reduce motion system tests’ reliance on subjective evaluations and improve harmonization of motion system fidelity;

- **General**
  - Transport delay
  - Visual brightness resolution
  - Subjective tests for Performance Based Navigation
  - Editorial improvements
WATS 2015 – AND MORE GOOD NEWS!!!

- FAA takes the initiative in its recently updated and published rule Part 60 Change 2

Additionally, as a result of public comments filed in response to the NPRM for this rule, the FAA added deviation authority to § 60.15(c)(5). The primary purpose for including this deviation authority is to allow for FSTD sponsors to initially qualify a new FSTD using internationally recognized FSTD evaluation standards, including those issued by the ICAO or another national aviation authority. This will improve international harmonization of FSTD evaluation standards as well as reduce redundant FSTD qualification documentation in instances where a FSTD is qualified by multiple national aviation authorities or evaluated under a bilateral agreement.

- Will EASA follow in 2016?
We have not wasted our efforts...

- FFS Level Ds well understood and harmonised across EASA/FAA/ICAO FSTD regulations
- Lower Level Devices could be qualified using ICAO 9625 based upon their suitability for desired training tasks as an Acceptable Means of Compliance with EASA/FAA FSTD regulations

Regulatory adoption is starting...

- FAA, hopefully EASA and other NAAs in due course, are incorporating its content or permitted use into their FSTD regulations
ELIMINATING THE FSTD QUALIFICATION LEVEL VS TRAINING CREDITS CONFUSION

- In 9625 we have defined criteria to make it simpler for NAAs **globally** to easily evaluate different FSTD solutions to different training syllabi and competency based training needs *without prescribing the technical solution or trying to make them all fit current regulatory defined types*.

- FSTD technical specification is, & always should be, FSTD manufacturer, operator training course and training outcomes dependent.

- FAA / EASA/ IPTC will be discussing at Royal Aeronautical Society Flight simulation Group Spring conference
  - London 7/8 June 2016
THANK YOU