Introducing Glass Cockpit to Ab-Initio Flight Training

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The Training Platform

12 Diamond DA-40 and 2 DA-42 Aircraft
PBN Approved:
RNVA1, RNAV2, RNP 1, RNP 2, RNP APCH
Synthetic Vision Technology
Terrain Advisory Warning System

Visual / Aural
Traffic Advisory System
Electronic Flight Bag

Controlled Document Library

SOP's
FCOM
Checklists
QRH

Maps
Charts
Approach Plates
SID / STAR
Massey Aviation Graduate

- Full Glass, SVT, TAWS, TAS, Autopilot
- RNP / RNAV Primary navigation
- VNAV profile management
- VOR / ILS for contingency training
- iPad EFB
- Electronic – Weight and Balance
  - T/O / LND Performance Data
Ab-Initio

Basic flying skills

Managing the FMS advanced systems
Challenge we have is to take it all off them and start with the basics...
Key Issues

- Teach the Basic Flying skills
- Teach FMS / Automation

AND teach ALL the FMS Features

Structured, controlled step by step development process
Technology Introduction

- New Fleet = Total rethink of how we train...
- Competency based syllabus
- Start with basics (FMS & iPad EFB)
- G1000 Automation Syllabus
- Control the use of Autopilot and FMS (Pre-solo / VFR & IFR Basic / VFR & IFR Advanced)
- “Paper” before electronic
- “Paper” Navigation Log in flight
Teach how the system is designed, and how to use it correctly, (not just how to use it on XYZ flight).

Programming an FMS is an entirely different skill set

Controlled teaching ALL features
Competency Based Training

Straight and Level

- To fly on a constant heading, constant direction, at a constant altitude and in balance using visual references.

Scenario

- You and a friend want to go to a town nearby to see a rugby game. Your plan is to land two hours before game time in order to allow enough time for lunch.
Automation Philosophy

“Automation shall be used at the level most appropriate to enhance safety, passenger comfort, public relations and economy”

- All levels of automation and skills to move from one level to the another
- Plan ahead – program early
- Disengage or change level of automation if programming creates overload
Up to First Solo:  
Not used

Instrument Flying Basic / VFR Navigation Basic
HDG, ALT modes only

VFR Navigation Advanced / Instrument Rating Basic:
VS, FLC, NAV modes, SVT

Instrument Rating Advanced:
APR, VNV

Multi Engine Instrument Rating: All modes
Auto Flight Mode Awareness

“The sole purpose of automation is to aid flight crew in doing their job”

Avoid... “What is it doing now” moments

Proficient – all levels of automation

Move between levels of automation

Mode ”call-out”

Guidelines for autopilot use... SOP
Flight Path Management

- RNAV – RNP primary means
- Extreme care taken to ensure the correct information is loaded into the FMS.
- Programming Management under ATC pressure “unable”

Load
Verify
Execute
Monitor
Electronic Flight Bag

- MEL to dispatch aircraft
  - 1 x EFB for each crew member
  - 1 x Emergency Aircraft EFB
- Battery minimums
- AvPlan current and saved
- Bluetooth, WiFi and Cellular Off
- Hardware control
- 3 year replacement
- EFB syllabus phases
Light Aircraft
Technology Challenges

Structured – Controlled use of Technology

- Failures in Pitot Static System
- TAWS warnings VFR: “pull up” “don’t sink” “too low terrain”
- Autopilot mode calls
- Flight Phase Annunciation
- Requirement for formal logbook signoff of glass cockpit training.
Summary

- Automation is Safer - if trained sufficiently
- Training Syllabus must fit the technology
- Controlled, stage by stage use of technology in ab-initio training.
- Robust Standard Operating Procedures (SOP)
- Constantly assess and evolve with technology
Thanks

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