Training of Avionics General Aviation

YANNIC CATHALINA – CAE // KNVVL – 9 NOVEMBER 2018

Training of Avionics for GA

- CAE
  - World's premier supplier of flight simulation training devices to civilian and military customers
  - HQ in Montreal, Canada
  - Global presence and partnerships with most of the world's airlines
  - Technology leader

- Integration Specialist
  - Engineer responsible for software integration, testing, acceptance and approval of new and updated Level-D FFS in the global marketplace

Training of Avionics for GA

- CAE's civil simulation market
  - CS-25 multi-pilot aircraft
    - Airlines - Boeing/Airbus/Embraer/Bombardier
    - Business aviation – Bombardier/Gulfstream/Dassault
  - High value, high performance CS-23 single pilot turbine aircraft
    - TR required by NAA – ex. Embraer Phenom 100
    - No strict requirement, but built to order – ex. PC-12, King Air

Training of Avionics for GA

- Not CAE's civil simulation market
  - Piston aircraft (SEP/MEP)
  - FFS/FBS more costly to own and operate than most SEP/MEP aircraft
  - No training requirements set forth by NAA specifically for avionics, only aircraft classes

Training of Avionics for GA

- Regulatory requirements
  - Class ratings
  - Type ratings
  - Avionics ratings?

- Case-by-case evaluation of type
  - Ruling
  - 747 classic vs. 747-400

Training of Avionics for GA

- Same EASA type endorsement (B737). Find the differences:

Training of Avionics for GA

- Same EASA type endorsement (BD700). Find the differences:

Training of Avionics for GA

► How do the pros do it?

FFS/FBS

VPT/IPT

FMST

Training of Avionics for GA

▶ How do the pros do it?

"Video games"

Garmin G1000

Garmin G1000

G1000 training

- CAE FFS of a type that has a G1000
- Desktop simulators at GA schools
  - Diamond Flyers EHLE
- PC based simulator at home
  - X-plane 11 – C172 with G1000
  - Official Garmin G1000 trainer

X-plane v11

- PC-based flight simulator
- Serious, low-cost professional-grade simulation developed by pilots
- FAA approved modelling, in actual use on certified training devices
- Two included aircraft have a G1000 installation

Garmin G1000 trainer v8.20

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iPads in the cockpit

iPads in the cockpit

- Depressurization tested and approved for aviation use
- External AHRS, ADS-B and GPS modules
- No shortage of apps for-
  - Charts/maps
  - FMS
  - Standby instrumentation/synthetic vision
  - Logbook keeping
  - Training of G1000 and other avionics
- You get what you pay for

Synthetic Vision

- Garmin Pilot SVX
  - Synthetic vision on par with latest offerings in business aviation aircraft
  - Display of ADS-B traffic and weather with additional hardware module (as of 2018 only in the USA)
  - Speed tape is ground speed, not airspeed

Synthetic Vision

- Xavion
  - Display of gliding range with terrain elevation taken into account
  - Tunnel-in-the-sky to nearest suitable aerodrome in case of emergency including engine loss
  - Display of ADS-B traffic and weather with additional hardware module (as of 2018 only in the USA)
  - Accurate estimation of airspeed and other aircraft performance data, including takeoff distance through machine learning
  - FPV display

Don't forget to look out of the window!