Advancing FTD technologies and the opportunity to the pilot training journey
Aviation Training Innovation

Over the past decade the airline training industry has pursued technology to improve efficiencies and enhance training
• Shift training earlier in the training continuum
• Allow students to better learn at their own pace, with options to use simulation

Regulatory authorities have been willing to explore use of such technology, techniques and capabilities

Although there has been substantial innovation, opportunities exist
Example Type Rating
Past Training Journey

GROUND SCHOOL

Classroom based instruction
FMS Simulation
Review of Flow Patterns
Systems Integration Training

FLIGHT TRAINING

Static Briefing
Full Flight Simulator
Example Type Rating
Current Training Journey

- **SYSTEMS KNOWLEDGE**
- **PROCEDURE TRAINING**
- **FLIGHT TRAINING**

**LEARNING MANAGEMENT SYSTEM**

- Computer Based Training Tools
- Procedure Training Lessons and Tools
- Comprehensive Aircraft Simulation
- Briefing / Debriefing Station
- Flat Panel Device
- Full Flight Simulator
- Flight Training Device
Total Training Solution Type Rating Program
Utilizing L3 Products

- Systems Knowledge
  - Mobile Applications
- Procedure Training
  - Flat Panel Devices
- Maneuvers Validation
  - FFS
- Line Oriented Scenarios
  - FFS
- LOE/Checkride
  - FFS
Although there has been substantial innovation, opportunities exist…
Areas Of Innovation

Use of Distance Learning tools to enable early learning of procedures

- Leverage technology earlier in training
- Flows, standard operating procedures, flight profile activities and callouts
- Provide training in a way ‘familiar’ with the next generation
Areas Of Innovation

Augmented Reality/Virtual Reality

PROCEDURE TRAINING

Exterior Preflight
Areas Of Innovation

Leverage Distance Learning Content on Lower Level Training Devices

Content Guided Lessons
- Build upon the procedures knowledge gained through distance learning
- Incorporate Evidence Based Training and Competency Based Training concepts
- Empower students to obtain more training, and access to review content if desired
Areas Of Innovation

Leverage Distance Learning Content on Lower Level Training Devices

Content Guided Lessons
- Integrate within a Training Management System
  - Track and record student actions for instructor review and analysis
- Improve Ground Instructor efficiency
Another Step Forward
World’s First Level 7 FAA Device

FAA Level 7 increased fidelity and functionality including:

- FFS comparable visual scenes
- Reduced latency or transport delay – 100ms for instrument systems and 120ms for visual
- FFS software load
- Validation for First Officer controls
- Improved aural cues matching that of FFS
- Increased control feel dynamics to replicate aircraft
Areas Of Innovation

FAA Level 7 FTD

Part 60 outlines Tasks vs FTD Level – Subjective Requirements

- Increased subjective requirements for FAA FTD Level 7
- FAA will be incorporating additional Part 60 defined FSTD levels into the pilot training and checking requirements
- Assuming the FAA updates similar to Subjective Requirements, these will have a strong impact on FTD utilization for initial training

Utilization as part of recurrent training

- Field Study for use in recurrent training (US AQP Airline)
Areas Of Innovation
FAA Level 7 FTD

Potential additional task credit for a Level 7 FTD include (majority qualified for introductory initial or recurrent qualification training):

- Taxiing
- Takeoff (normal, crosswind, instrument, engine failure)
- Windshear recovery
- Precision Approach (One engine inoperative)
- Circling Approach
- Missed Approach (One engine inoperative)
- Landings and Approach to Landing

Additional tasks acceptable for Level 7 FTD and lower (not currently noted for training credit):

- Takeoff and Departure Phase – Rejected Takeoff
- Engine Failure (Inflight Maneuver)
- Circling Approach
- Missed Approach (Normal)
- Flight Control Systems (Normal / Abnormal Procedures)
Just-In-Time Training and operations innovation

Just-in-Time Training Capabilities

- Maintenance and Pilot Departments
- Ensure minimum level of competency during training events
- Relevance to the operations environment as well
- Why not provide tools to prepare and/or augment a crew for unique operational requirements?
  - Interactive Computer Based Training
  - Simulations
  - Videos
  - Augmented Reality
With the improved training efficiencies, cost reductions can be recognized:

- Improved utilization of instructors and devices
- Efficiencies in reporting and assessment
- Reduction of training center footprint due to increased distance learning and small infrastructure requirements
Thank you