



# ACCELERATING FLYING PROFICIENCY USING EXTENDED REALITY

<https://www.youtube.com/watch?v=T8KDHxbhgk0>

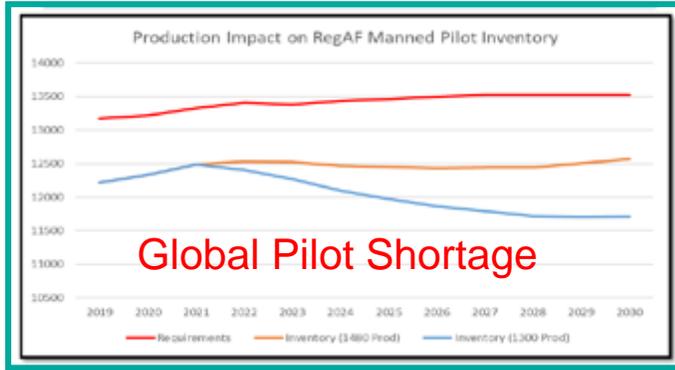
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Air Force Business Unit Lead



TRAIN FASTER. RETAIN LONGER. PERFORM BETTER.



# WHY: TRANSFORMATION IMPERATIVES



Pilot Requirements  
 Inventory on max pace  
 Inventory on current pace

Global Pilot Shortage



HISTORIC USAF UNDER PRODUCTION / US AIRLINES HIRING

TRAINING AIRCRAFT DIVESTITURES

AIRMAN'S EXPECTATION



AIRMAN'S REALITY

"...WE CANNOT ASSUME AIR DOMINANCE IS GUARANTEED AND WE NEED TO RECOGNIZE 'GOOD ENOUGH' TODAY WILL CAUSE US TO FAIL TOMORROW." - US CHIEF STAFF AIR FORCE



# How: "PILOT TRAINING NEXT"



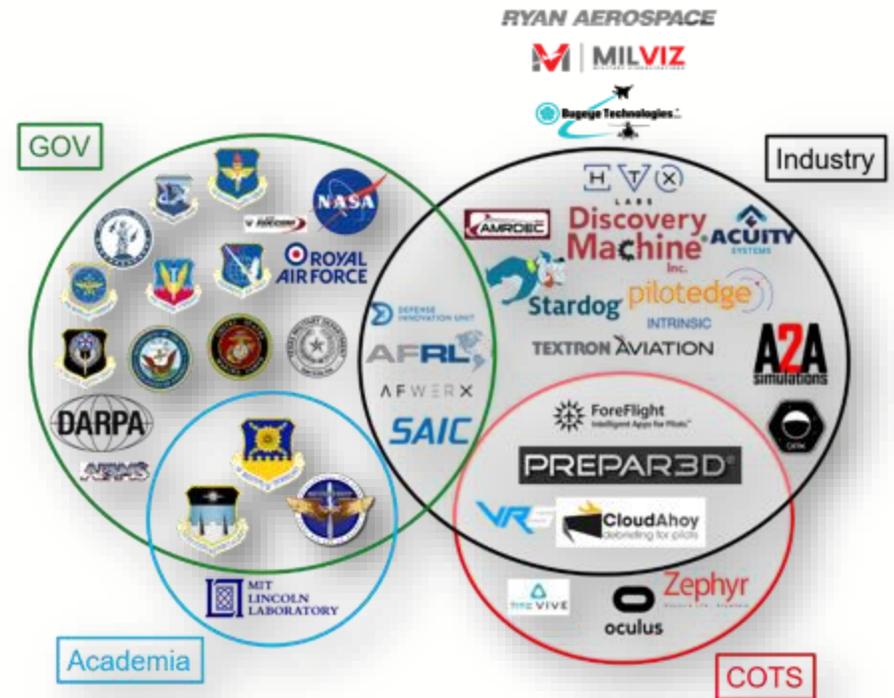
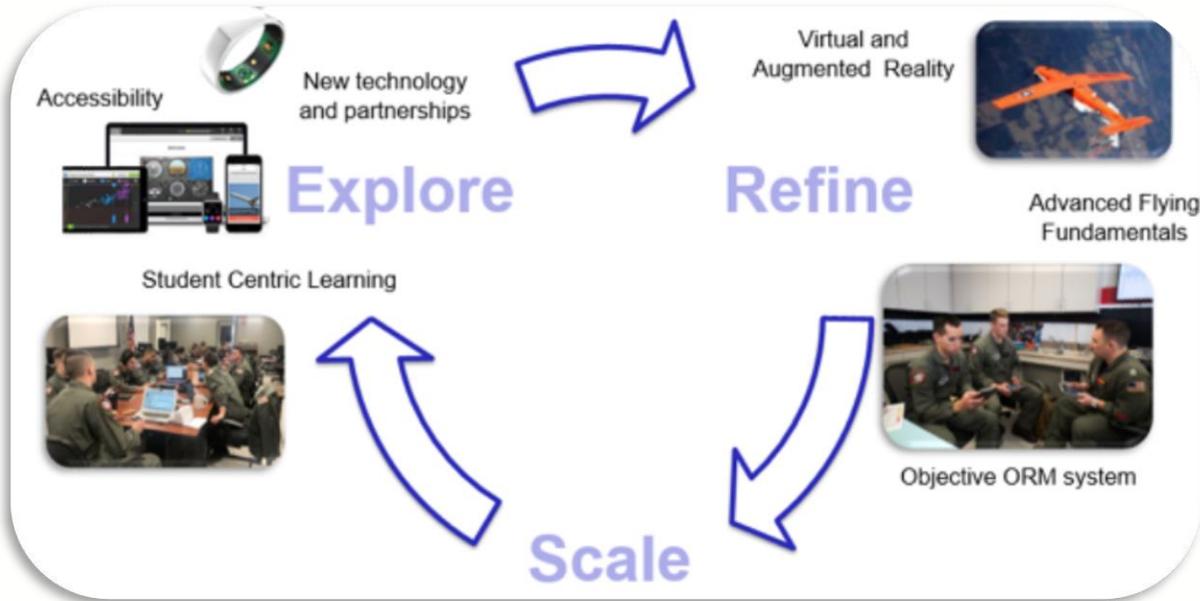
CURRENT PILOT TRAINING  
OPTIMIZED & DESIGNED  
FOR  
4TH GEN FIGHT



PILOT TRAINING NOW  
PILOTS READY  
FOR THE  
6TH GEN FIGHT

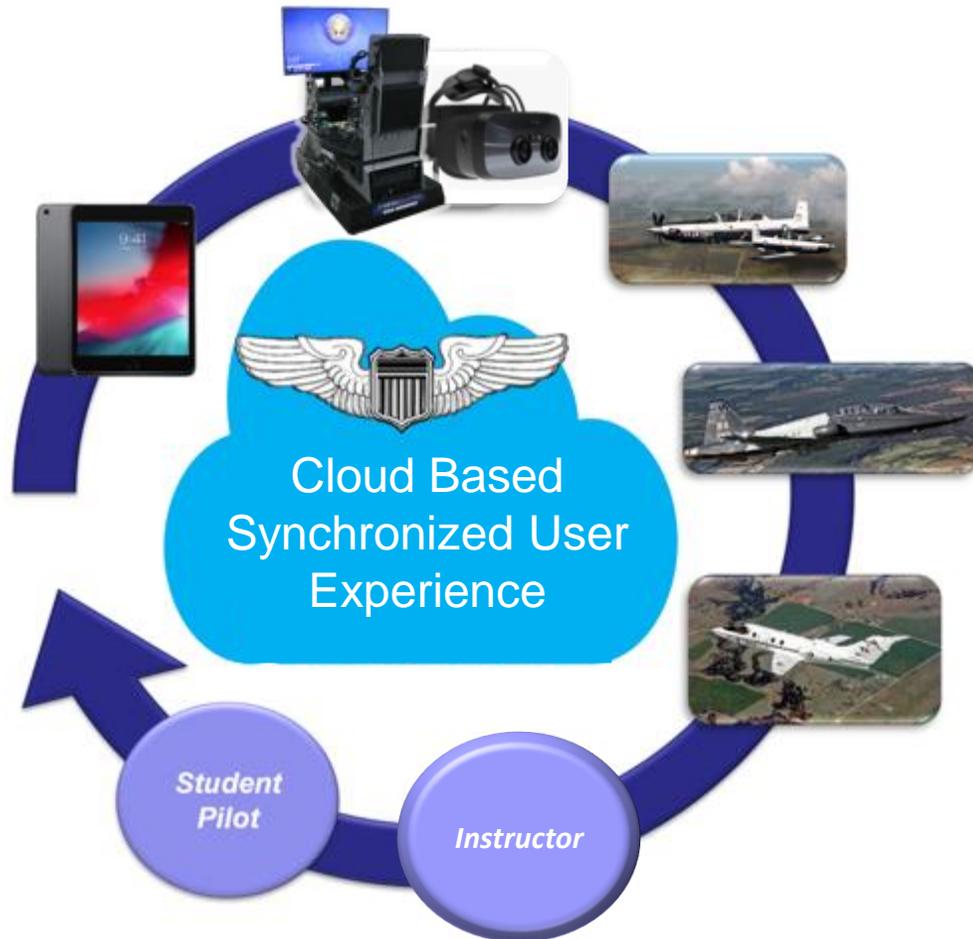


2018: EVALUATE PARTNERSHIPS / TRAIN  
DEVELOP TECHNOLOGY / INNOVATE





# VISION AND “PROVEN INNOVATION CONCEPTS”



“Better First....Faster When Able”

## PROVEN INNOVATION CONCEPTS

- ✓ “READY NOW” CONCEPTS:
  - ✓ QUALITY INSTRUCTION AT ACCEPTABLE IP/SP RATIO
  - ✓ SEAMLESS ACCESS TO CONTENT (LEVERAGE CLOUD)
  - ✓ INTEGRATE IMMERSIVE TECHNOLOGY
  - ✓ TRANSITION TO LEARNER-CENTRIC SYLLABI
  - ✓ HUMAN PERFORMANCE OPTIMIZATION
- ✓ “IN WORKS” CONCEPTS :
  - ✓ BIOMETRICS (EYE TRACKING, HP MONITORING)
  - ✓ COMPETENCY BASED/PACED TRAINING
  - ✓ ARTIFICIAL INTELLIGENCE (AI) AND AUTOMATION
  - ✓ DATA ANALYTICS AND DATA DRIVEN DECISION-MAKING



# PILOT TRAINING NEXT EVOLUTION





# WHY IMMERSIVE TRAINING DEVICES?

## ✓ UBIQUITOUSLY AVAILABLE:

- ✓ ITDs: 60-70 / BASE & AVAILABLE IN THE SQUADRON
- ✓ SIMS: 2-4 / BASE AT THE SIM BUILDING (NOT COLLOCATED)
- ✓ ITDs MORE ACCESSIBLE FOR DEBRIEF / POST REQ'MNT / WEEKENDS

## ✓ INCREASED "REPS AND SETS":

- ✓ VR/ITDs MAKE BETTER USE OF FLYING HOURS
- ✓ ADDED 100+ HRS VR/ITDs IN T-6/T-38S; FLYING HRS REMAIN
- ✓ SOLO 6-10 RIDES EARLIER, PATTERN REFS/RADIO CALLS ON \$ RIDE

## ✓ LOWERED OVERALL COSTS:

- ✓ ITDs: ~\$30-80K + ~\$30K SUPPORT ANNUALLY
- ✓ SIMS: ~\$3-5.0M + ~\$170K SUPPORT ANNUALLY (+ INFRASTRUCTURE)

## ✓ INCREASED FLEXIBILITY:

- ✓ TECH REFRESH ~2 YEARS
- ✓ ADAPTABLE TO ANY ENVIRONMENT (ICAO, LOCAL AREAS, NEW DBS)





# CURRENT/FUTURE XR TRAINING SOLUTIONS

## Main Instrument Panel & Lower Console

- ✓ Aircraft-Specific (Modular and Interchangeable)
- ✓ Bolts onto Main Platform

## Overhead Panel

- ✓ Aircraft-Specific
- ✓ Plug and Play in Mixed Reality

## Center Platform

- ✓ Aircraft-Specific
- ✓ Links Two cITD Sleds Together
- ✓ Overhead Panel Mount

## Extensible seats

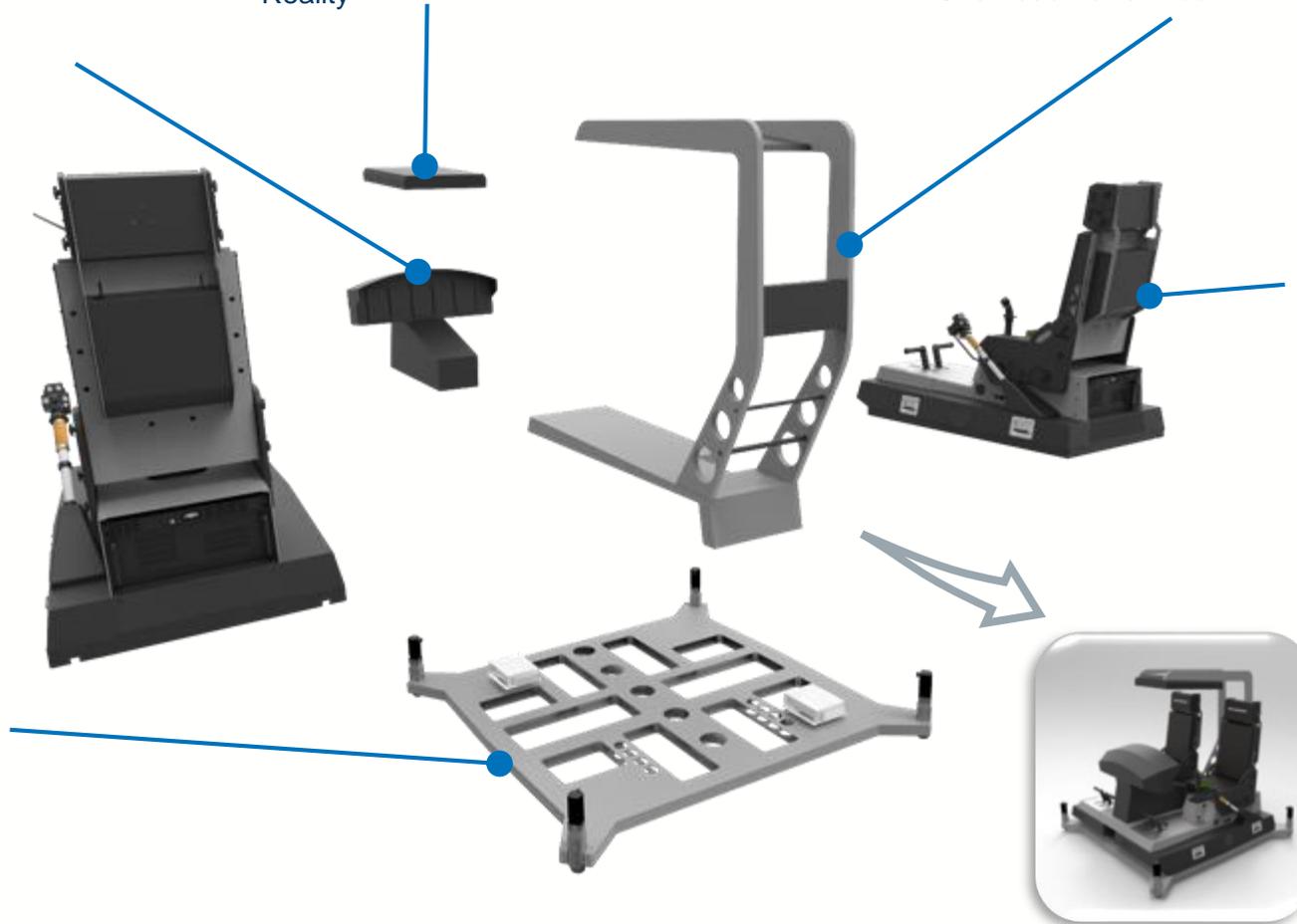
- ✓ Existing Design Upgraded for Reconfigurability
- ✓ Upgraded Control Loading in Cyclic, Collective, and Pedals
- ✓ Two Single-Seat Devices Linked for Synchronized Controls
- ✓ Proven. Tested. Robust.
- ✓ Adjustable Seats/pedals
- ✓ Near-Replica Control Grips
- ✓ Interchangeable Controls

## Extensibility to Any Platform Fixed / Rotary



## Motion Platform

- ✓ Optional (Bolt On)
- ✓ Provides Realistic Motion (3DOF) and Vibration Queues
- ✓ Can Reduce Motion/VR Sickness





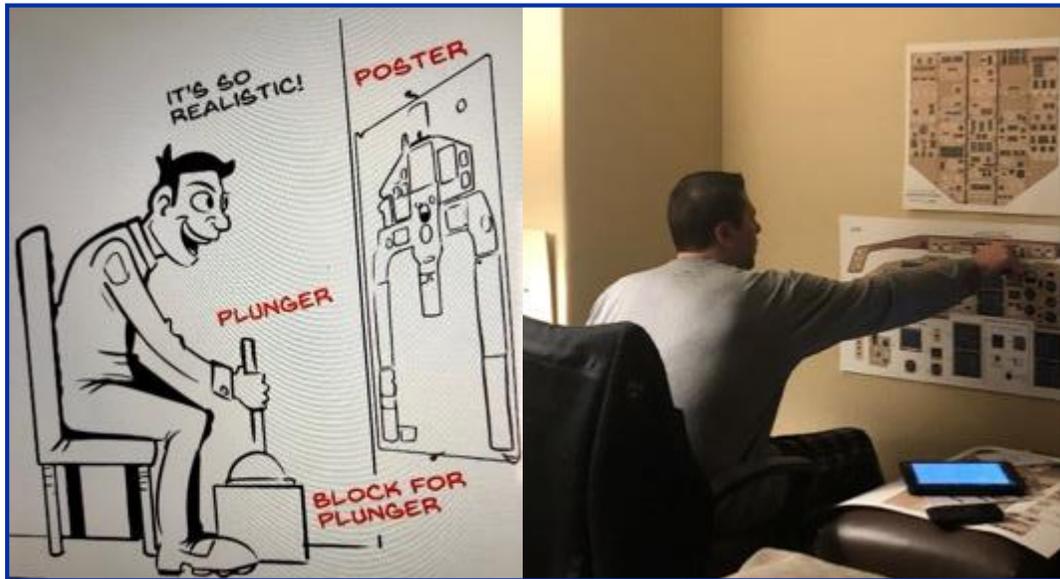
# XR IMMERSION TAKEAWAYS

**SEAMLESS ACCESS TO CONTENT DELIVERED IN AN IMMERSIVE ENVIRONMENT CONTRIBUTES TO:**

- ✓ **LOWERED OVERALL BARRIER(S) TO ENTRY**
  - ✓ LOWER RELATIVE COSTS TO TRADITIONAL SIMULATORS
  - ✓ UNPRECEDENTED ACCESS AND AVAILABILITY AT POINT OF DEMAND
  - ✓ FREE PLAY AND GAMIFICATION OPPORTUNITIES
  - ✓ CONTENT DELIVERED AT THE "SPEED OF RELEVANCE"
- ✓ **INCREASED PRESENCE AND ENGAGEMENT**
- ✓ **INCREASED OPPORTUNITY FOR ON-DEMAND REPS/SETS**
  
- ✓ **HIGHER INITIAL STARTING PROFICIENCY**
- ✓ **LIMITED SKILLS REGRESSION BETWEEN SORTIES**
  - ✓ AVAILABILITY TO TRAIN REDUCES REGRESSION
  - ✓ XR'S FIDELITY OF THE TRAINING CREATES "STICKINESS" TO LEARNING
  
- ✓ **PROFICIENCY REALLOCATION**
  - ✓ MORE EXPENSIVE/COMPLEX TRAINING ALLOCATED TO APPROPRIATE TRAINING MEDIUM (AIRCRAFT)



# QUESTIONS & OPEN DISCUSSION



**YESTERDAY**



**TODAY**