The United States Air Force Test Pilot School

Scientia est Virtus → "Knowledge is Power"

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Commandant
USAF Test Pilot School

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Air Force Test Center (AFTC) T&E Education

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- **AFTC has varying levels of education for its testers**
  - ***Unit/Base level newcomers training***
  - ***Unit/Base level task-specific training***
  - ***T&E Fundamentals Short Course***
  - ***Test Pilot School***
- **Test Pilot School (TPS) is the graduate school for T&E**

TPS Mission

Produce highly-adaptive critical-thinking flight test professionals to lead and conduct full-spectrum test and evaluation of aerospace weapon systems

TPS Vision

Be the world's premiere institution for flight test education, training, and research

USAF TPS Evolution

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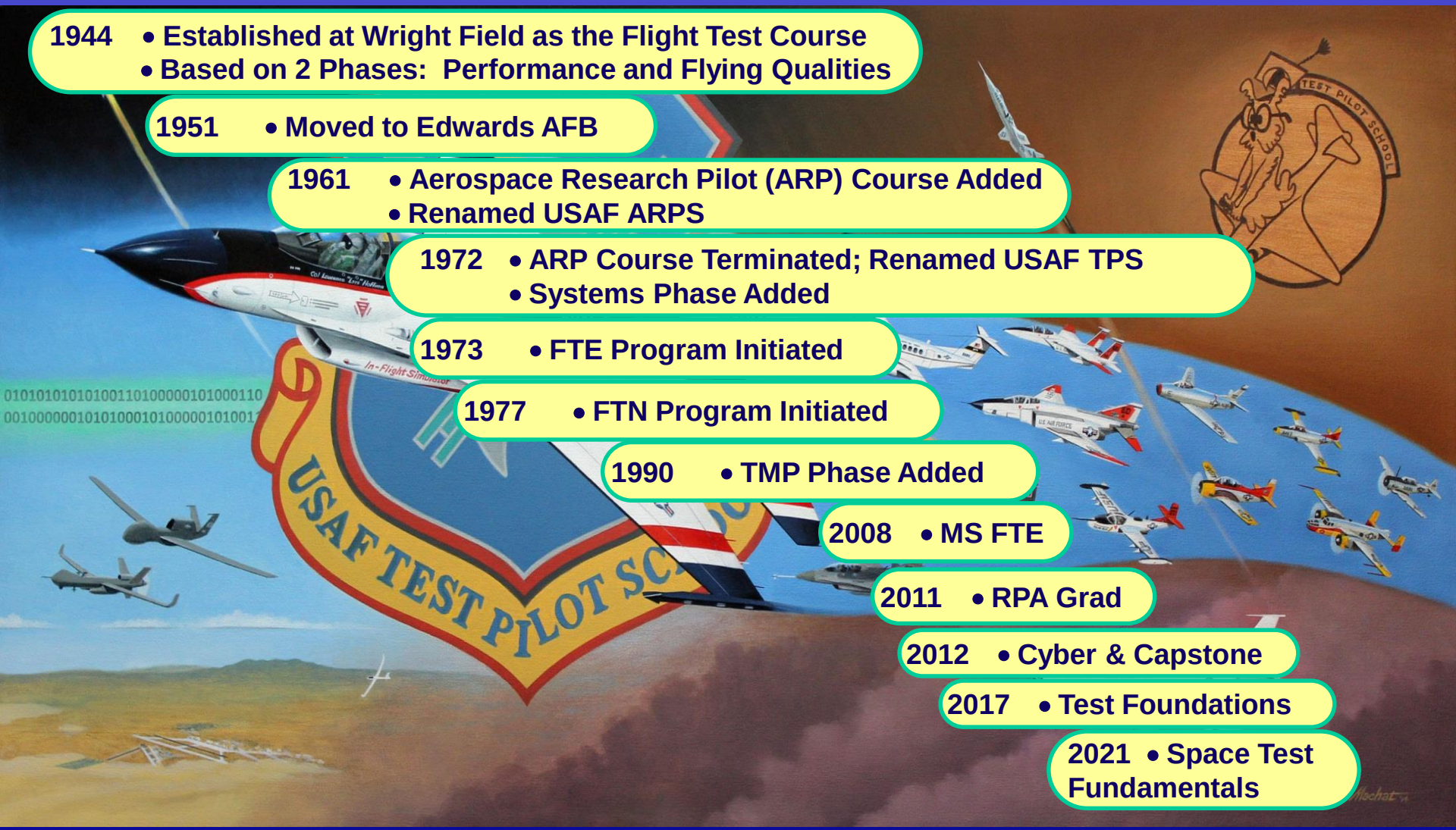
1940 1950 1960 1970 1980 1990 2000 2010 2020→Present



1944
- Established at Wright Field as the Flight Test Course
- Based on 2 Phases: Performance and Flying Qualities

1951
- Moved to Edwards AFB

1961
- Aerospace Research Pilot (ARP) Course Added
- Renamed USAF ARPS

1972
- ARP Course Terminated; Renamed USAF TPS
- Systems Phase Added

1973
- FTE Program Initiated

1977
- FTN Program Initiated

1990
- TMP Phase Added

2008
- MS FTE

2011
- RPA Grad

2012
- Cyber & Capstone

2017
- Test Foundations

2021
- Space Test Fundamentals

USAF TPS Overview

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- **48-week Program, MS Degree in Flight Test Engineering**
- **2 classes per year (24 students per class)**
  - *A Class (Jan – Dec)*
  - *B Class (Jul – Jun)*
- **4 integrated courses**
  - *Manned Aircraft Pilot*
  - *Remotely Piloted Aircraft Pilot*
  - *Combat System Officer*
  - *Flight Test Engineer*

Course	Time in Service	Education	Experience
PILOT	< 9yr, 6 Mo	BS in Engr, Math or Physics (≥3.0 GPA)	IP or ≥ 750 / 1000 hours total time* ≥ 12 months AC
RPA/CSO	< 9yr, 6 Mo	BS in Engr, Math or Physics (≥3.0 GPA)	RPA: IP or ≥750 hours total time* CSO: IN or ≥500 hours total time
ENGINEER	< 8yr	BS in Engr, Math or Physics (≥3.0 GPA) Technical MS highly desired	≥ 2yr experience in: 13XX, 14NX, 21AX, 21CX, 21LX, 21MX, 33SX, 61SX, 62EX 63AX (civ: ≥ 2yr in T&E)

What Makes USAF TPS Unique?

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- **Rigorous Student Selection Process**
  - *Comprehensive Candidate Evaluation Program*
  - *Application -> Central Selection Board -> Week-Long Interview*
- **Master of Science in Flight Test Engineering**
  - *World-Class Instructor Cadre*
  - *9 PhDs on staff (MIT, AFIT, VA Tech)*
  - *7 PhD students in the pipeline*
- ***Test Management Projects (TMPs)***
  - *Cradle-to-Grave (Test Planning-to-Reporting) Test Project*
  - *Unique "Laboratory" Aircraft + Sims + Virtual*
- ***Airborne Laboratories***
  - *Curriculum Aircraft*
  - *Qualitative Evaluation (Qual/Eval) Aircraft*

TPS Graduate/Class Statistics

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- *77 Years of History*
- *3,189 Total Graduates*
  - *112 General Officers*
  - *66 Astronauts*

USAF TPS Curriculum

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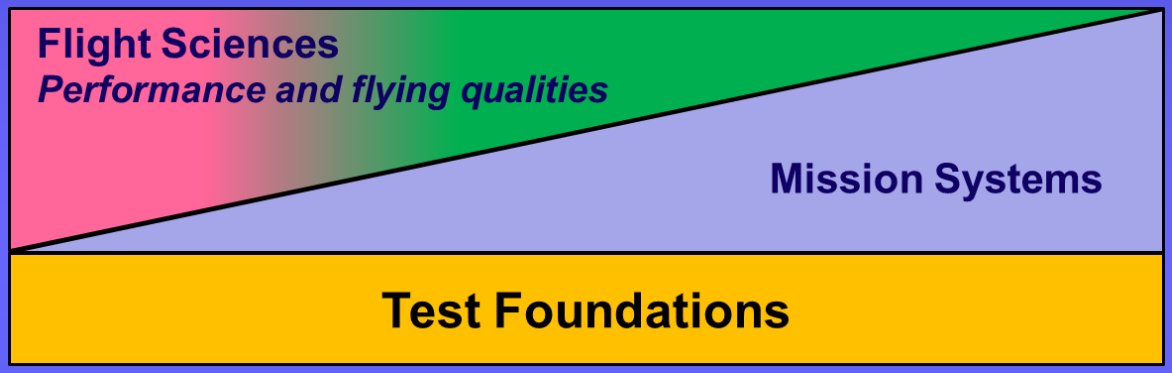
- ***48-week Program*, MS Degree in Flight Test Engineering**
- ***3 "Big Blocks"***
  - ***Flight Sciences***
  - ***Mission Systems***
  - ***Test Foundations***



- ***13 Academic Courses = 50 semester-hours total***
  - ***2,500 Graduate hrs Average***
  - ***21 Scored Academic Exams***
    - *19 Individual Academic Exams*
    - *Comprehensive Written and Oral Exams*
  - ***85 Airborne Laboratory Events***
  - ***38 Graded Reports (31 written + 7 oral)***
    - *Capstone Test Management Project (Report + Defense)*

Exchange Opportunities & International Partnerships

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Affiliations

- *Student Capstone Trips*
- *Student/Faculty Exchanges*

USAF TPS Curriculum Aircraft

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USAF TPS Curriculum Aircraft

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USAF TPS Curriculum Aircraft

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X-62A Variable In-flight Simulator Test Aircraft (VISTA)

Variable Stability Learjet

Control Rooms

Flight Sciences Simulators

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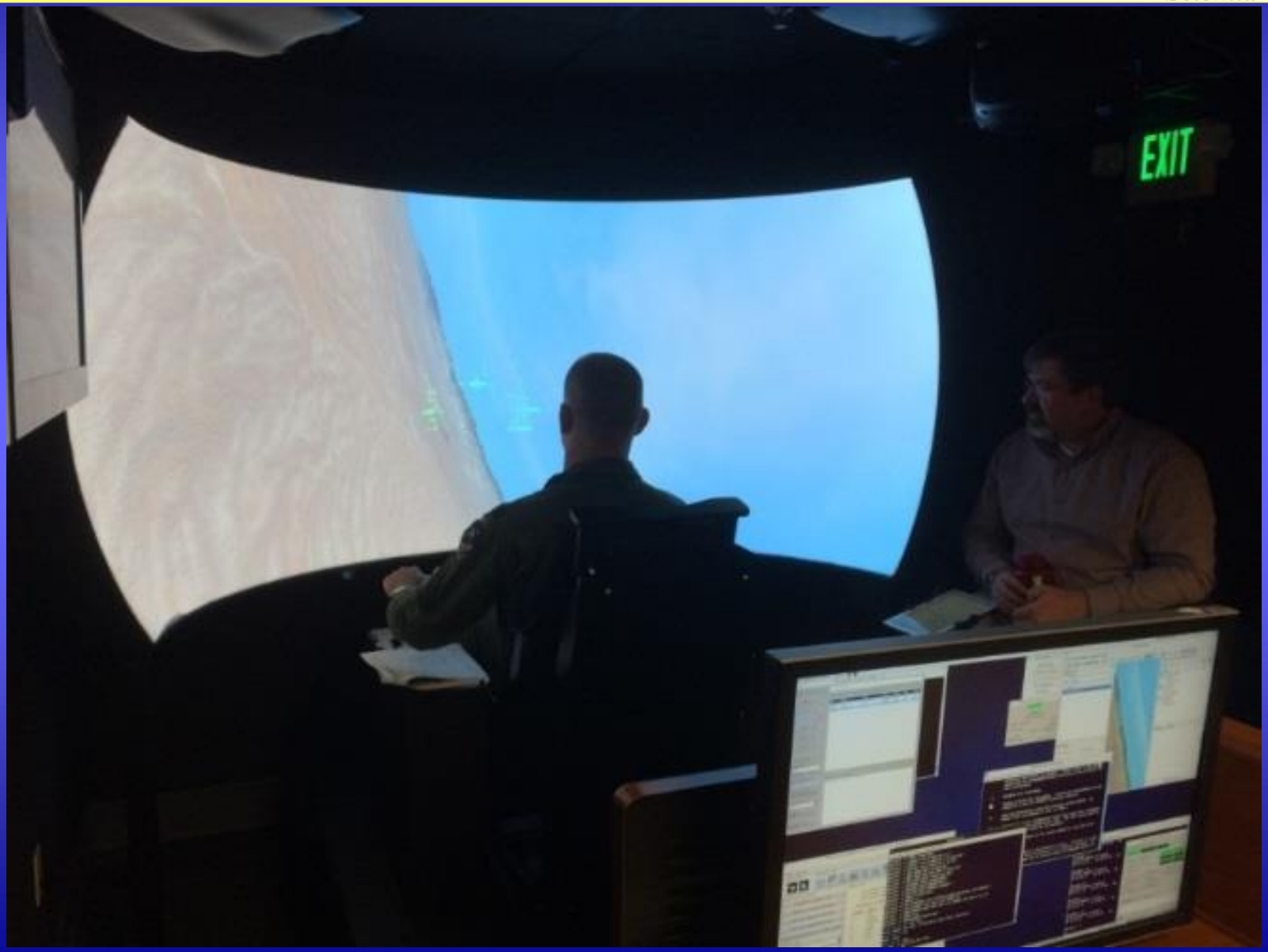

Mission Systems Simulators

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Qualitative Evaluation Program

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Test Management Projects

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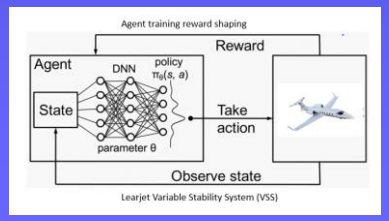
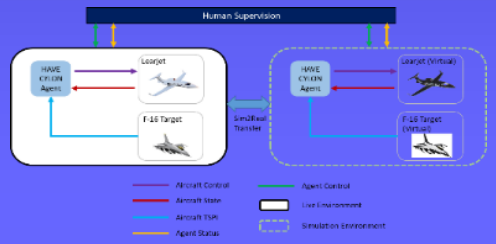
Project A

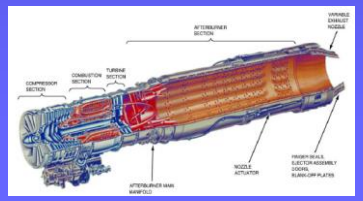
- Demonstrated transfer of simulation-trained artificial intelligence agents from simulation to a flight test environment
- Observed human factors during flight test of artificial intelligence agents





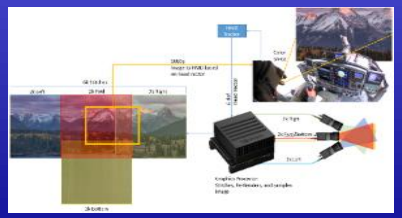
Project B

- Demonstrated T-38C telemetry capability
- Determined installed performance of a T-38C J85 engine with an increased minimum nozzle area
  - Adjusted variable exhaust nozzle scheduling on a single engine per flight



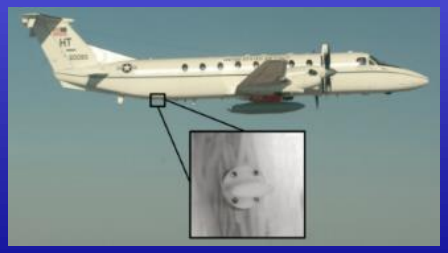
Project C

- Investigated minimum required lateral and vertical sensor FOV needed for safe and effective rotorcraft takeoff and landing operations in a degraded virtual environment (DVE)
- Demonstrated suitability and military utility of high-ISO camera systems for operationally-representative tasks during low level flight in a DVE



Project D

- Demonstrated the SPHINX Payload's utility as an airborne surrogate test satellite for ground station testing
- Utilized the SCN Dedicated On-Orbit Test Asset (SPHINX) which provided basic satellite functionality for effective ground station testing



The Future→
Test Professional School?

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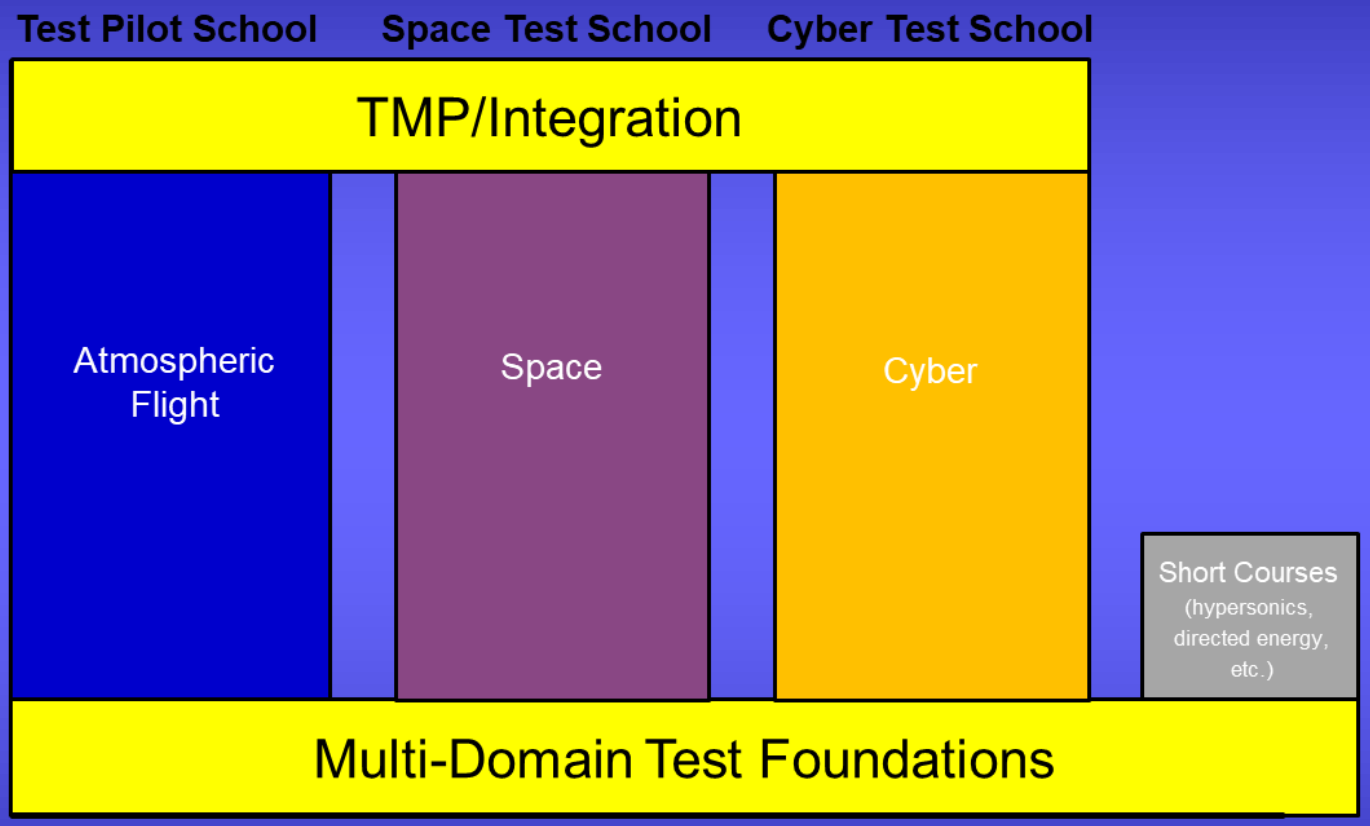

TPS is continuing to evolve to meet full-spectrum T&E education needs

QUESTIONS?