

Aug 13th, 9:00 AM - 10:15 AM

Holographic Micro-simulations to Enhance Aviation Training with Mixed Reality

Lori Brown FRAeS, MSc, HFAvn

Associate Professor & Researcher, Western Michigan University, lori.brown@wmich.edu

Follow this and additional works at: <https://commons.erau.edu/ntas>

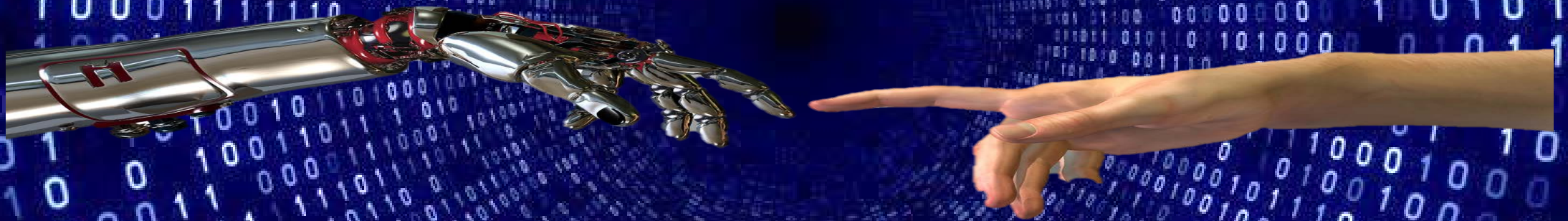


Part of the [Aviation and Space Education Commons](#), [Curriculum and Instruction Commons](#), [Educational Assessment, Evaluation, and Research Commons](#), and the [Maintenance Technology Commons](#)

Brown, Lori FRAeS, MSc, HFAvn, "Holographic Micro-simulations to Enhance Aviation Training with Mixed Reality" (2018). *National Training Aircraft Symposium (NTAS)*. 1.
<https://commons.erau.edu/ntas/2018/presentations/1>

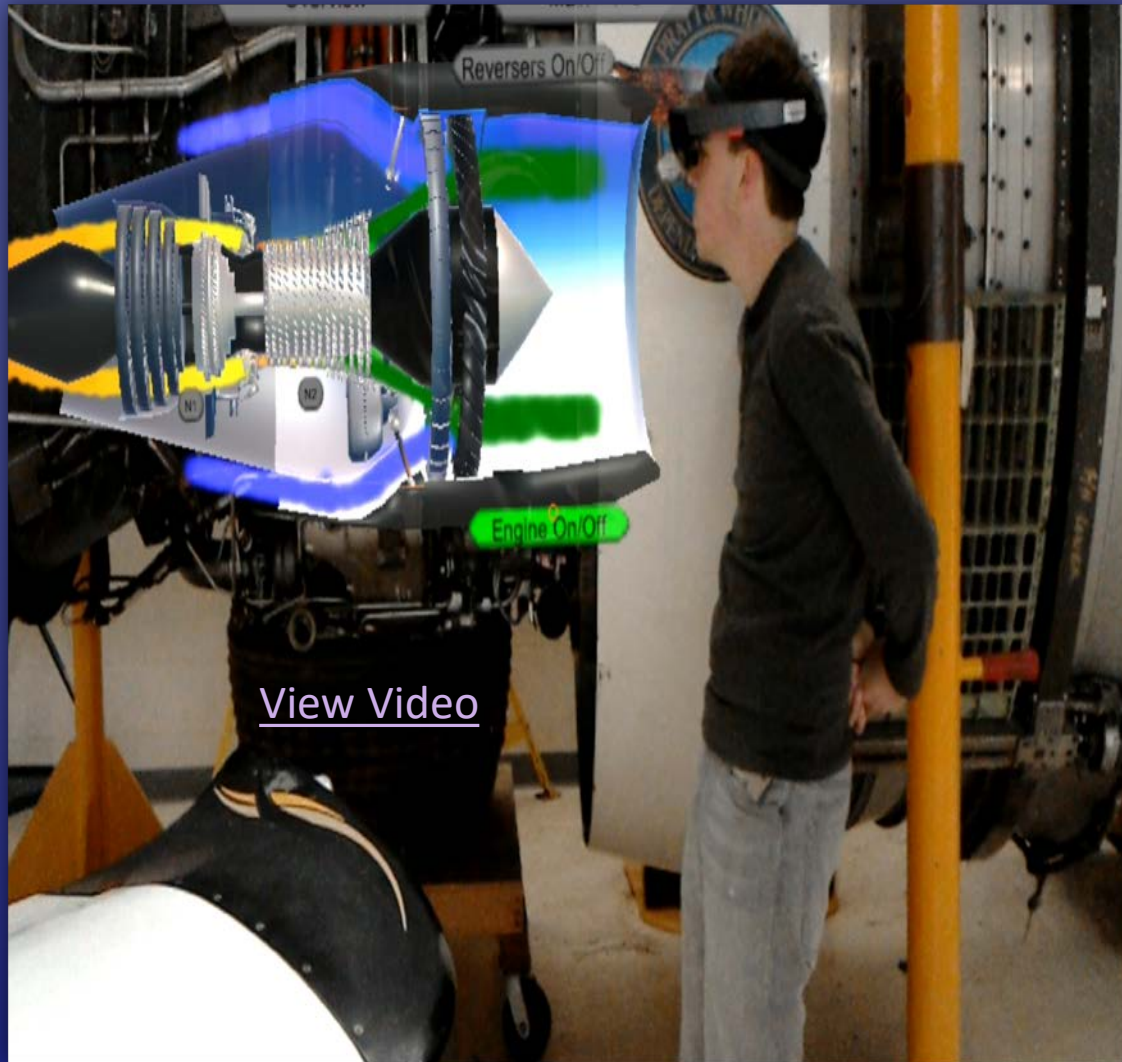
This Presentation is brought to you for free and open access by the Conferences at Scholarly Commons. It has been accepted for inclusion in National Training Aircraft Symposium (NTAS) by an authorized administrator of Scholarly Commons. For more information, please contact commons@erau.edu.

Tapping into Mixed Reality to Enhance Aviation Training with Micro-simulations



National Training Aircraft Symposium 2018
Associate Professor Lori J. Brown, MSc HfAVN, FRAeS
Western Michigan University, College of Aviation
Punta Gorda, Florida

HOW CAN WE USE MIXED AND AUGMENTED REALITY MICRO-SIMULATIONS AVIATION TRAINING?



- Create Virtual Laboratories
- Bridge the gap between classroom and simulation
- Procedure Training
- Aircraft Systems Training
- Aircraft Familiarization
- Maintenance Training-Operations
- Cabin familiarization and training
- Virtual manuals
- Hands Free Remote assistance
- Enhance Printed material



Bridge the gap between classroom and simulator with MR Micro- simulations.



Instructor can see what the student is doing computer and interact in real time from any location. Session is filmed for debrief.



INTEGRATING MIXED REALITY MICRO-SIMULATIONS INTO THE CLASSROOM AT WESTERN MICHIGAN UNIVERSITY



[View Video](#)

Create Virtual Training Elements and Lab equipment when Space and Resources are lacking.





WMU Mixed Reality Laboratory for Aircraft Systems Training



[View Video](#)



Engine On/Off

Prop Governor

Igniter

Fuel Nozzel

Exhaust Duct

Centrifugal
Compressor

Compressor
Turbine

Quill Shaft ->

Axial Compressor

Inlet Screen

Reduction Gearbox

Power Turbines

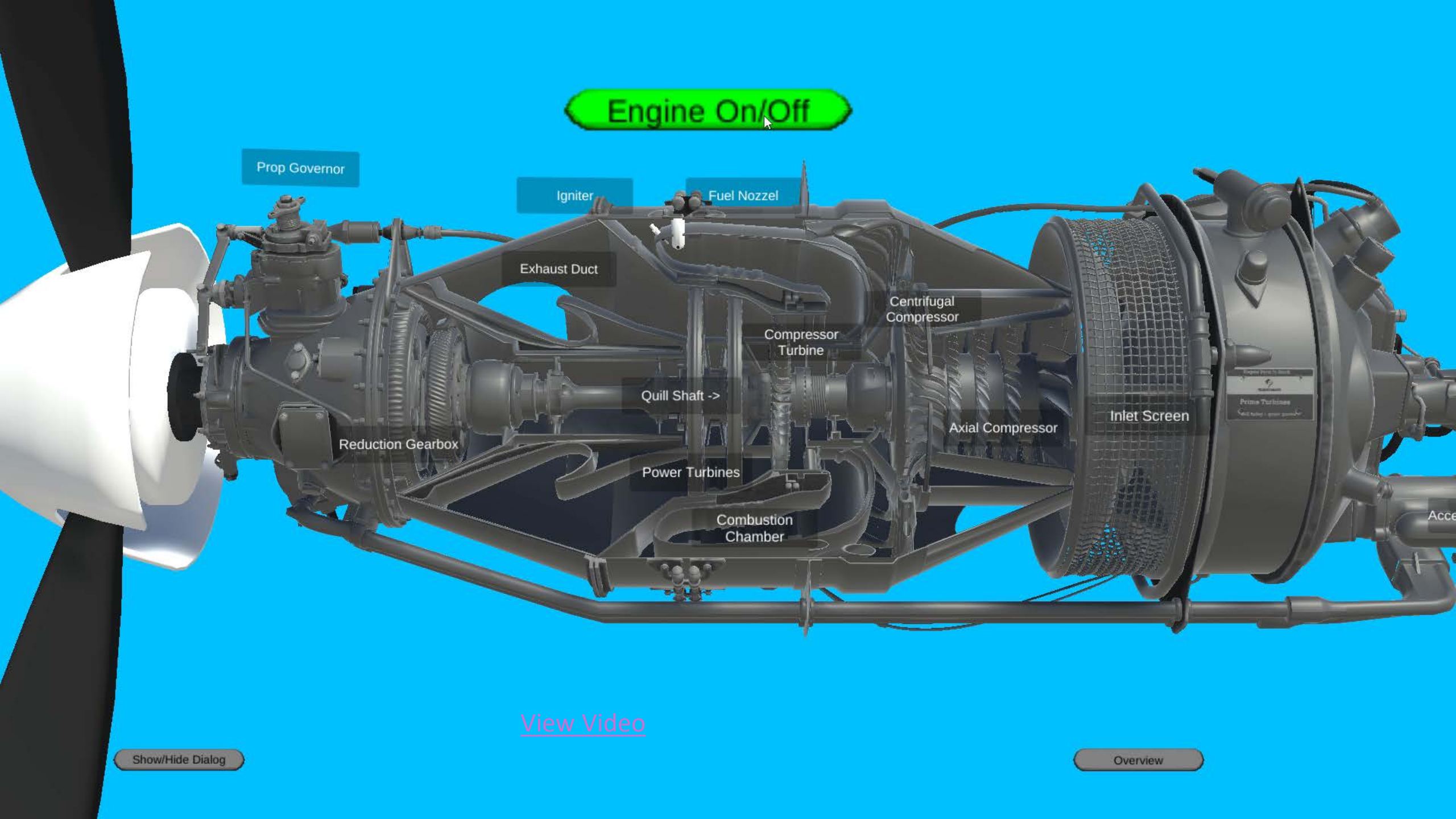
Combustion
Chamber

Acce

[View Video](#)

Show/Hide Dialog

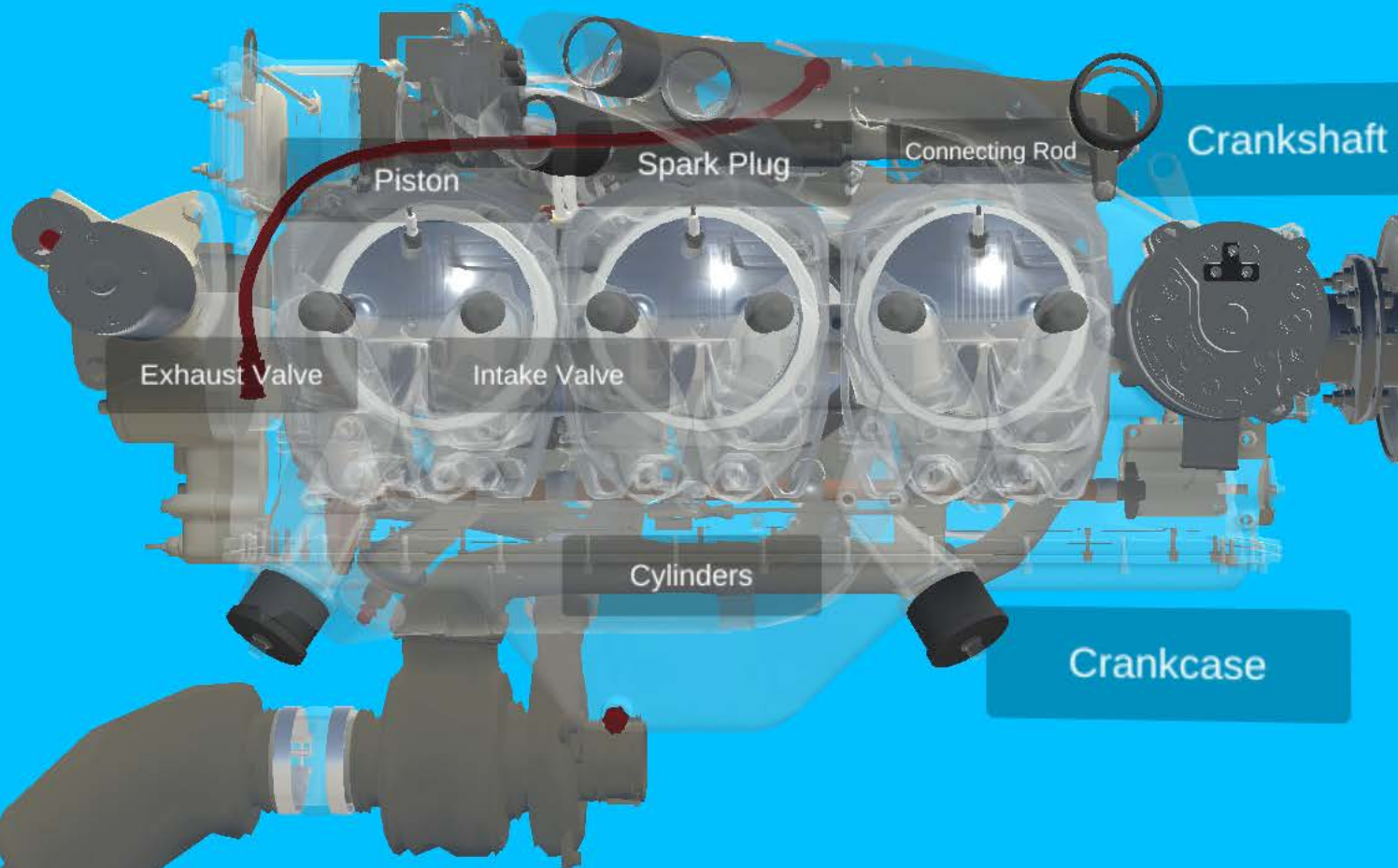
Overview



The Otto Cycle

Engine On/Off

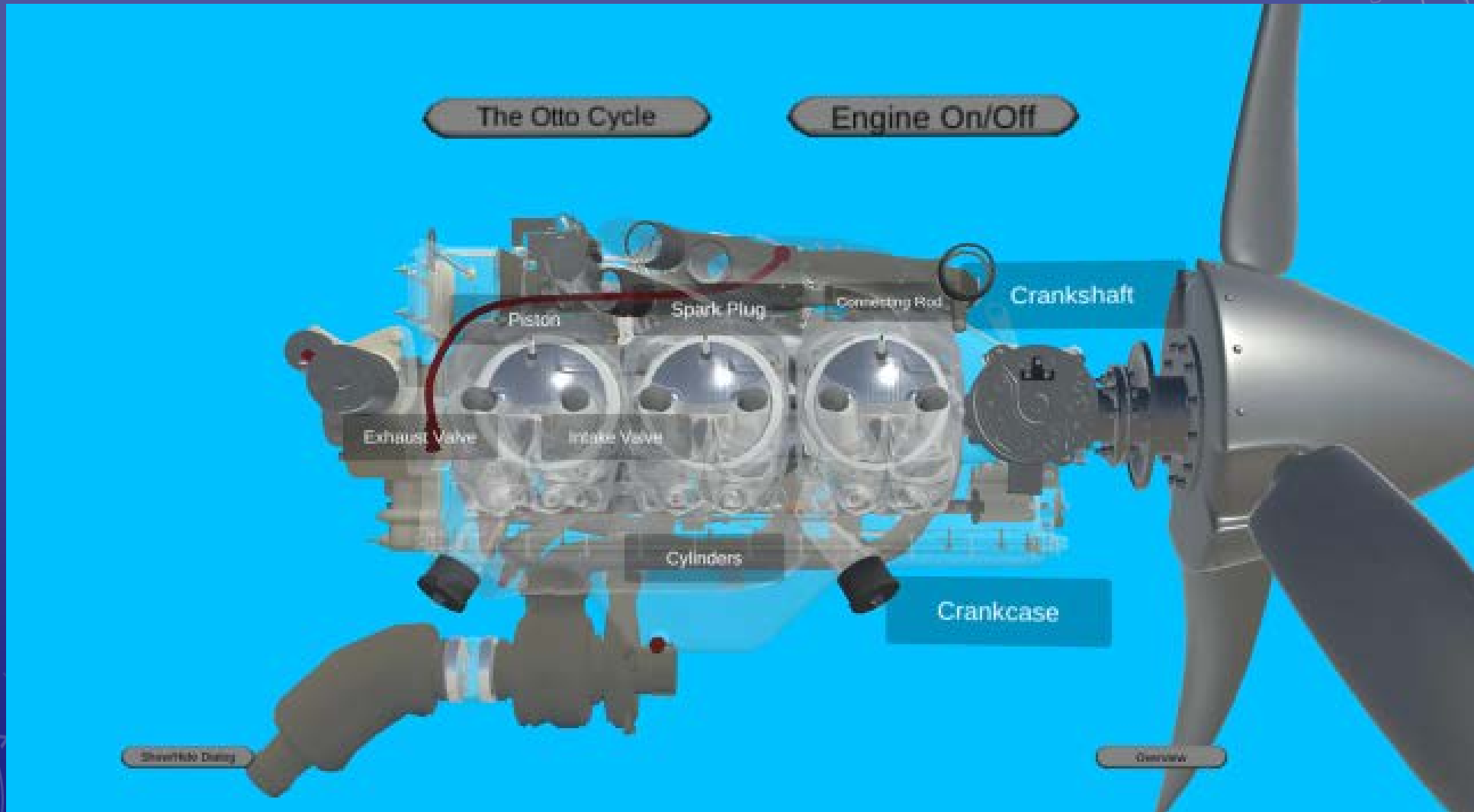
[View Video](#)



Show/Hide Dialog

Overview

Partially online AMT Maintenance programs reduce on-ground hands-on training reduced to only 7 months using interactive 3D modeling micro-simulations.



Transferring procedures training from the simulator to the HoloLens



[View Video](#)

Cockpit Systems Integration
Scenarios for each QRH
Procedures

Practice malfunctions
Assessments

Brings the simulation into any
learning space

Hands on Practice

Micro- simulations

Aircraft preflight/walkaround

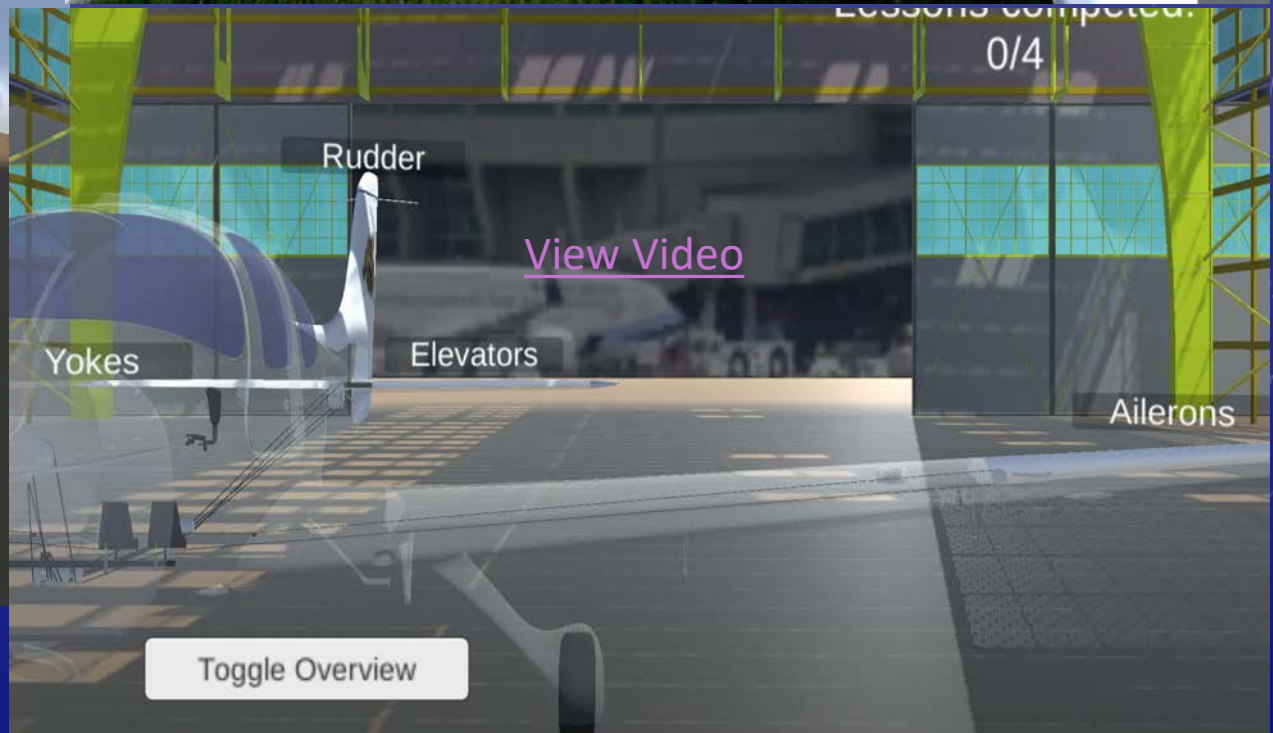
Aircraft Preflight, Familiarization and Safety Checks




Airplane Maintenance Training Scenario



WMU Cirrus SR22 Aircraft Preflight






Remote Expert Mode connects the crewmember to ground control via Skype. The person in the maintenance facility and the one in office are both seeing the same thing at the same time. Maintenance can get guidance for problems in real time as well as visual help.

[View Video](#)

Augmented reality using tablets and phones




Augmenting Weather
Education for a new
Generation of Learners

[View Video](#)

WEATHERXPLORE DEMO APP

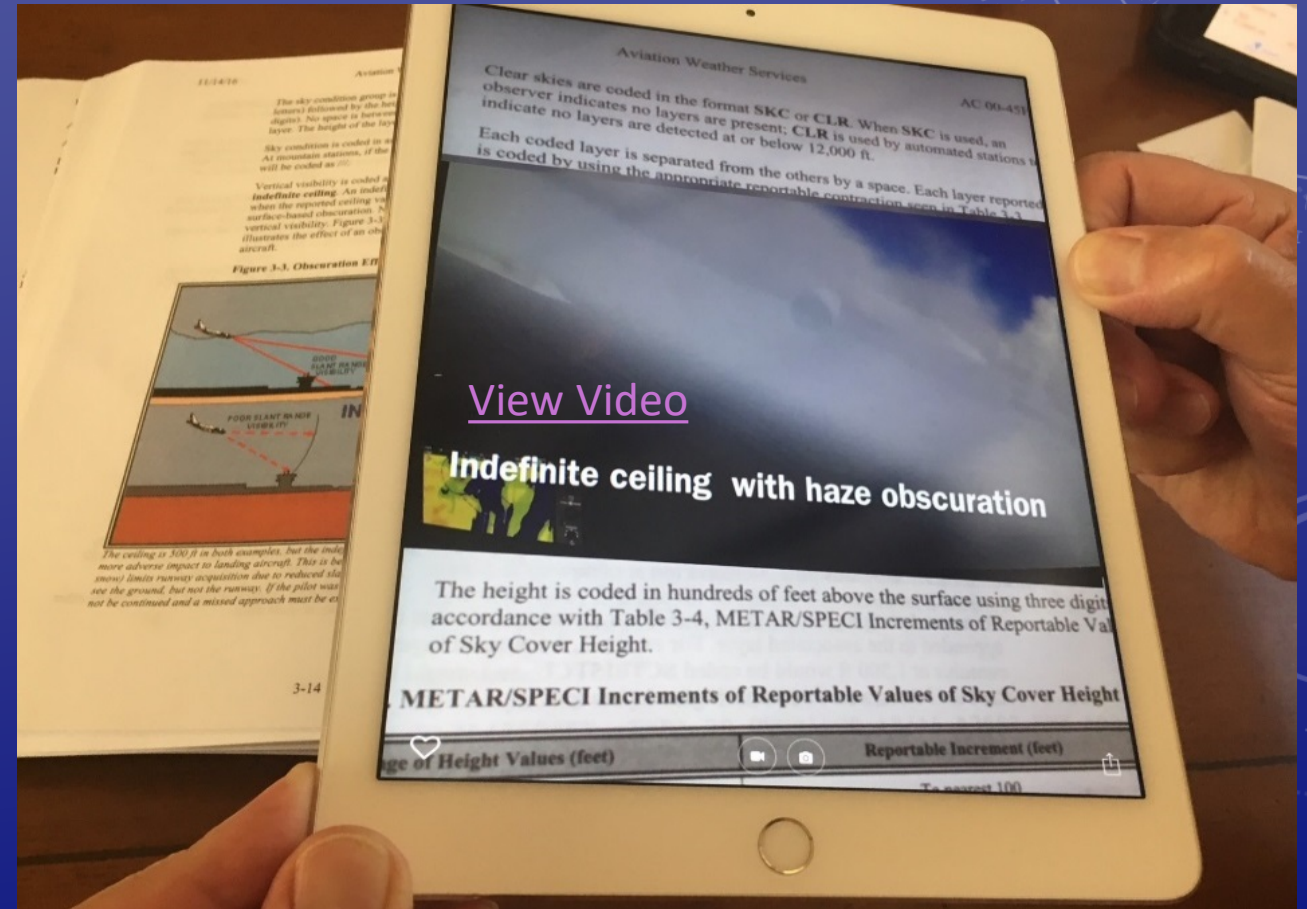
- Funded by FAA PEGASAS Center of Excellence, Weather Technology in the Cockpit Program
- Free Download from iTunes or Google Play



Advisory Circular

Subject: Aviation Weather Services **Date:** 1/8/18 **AC No:** 00-45H
Initiated by: AFS-400 **Change:** 1

1 PURPOSE OF THIS ADVISORY CIRCULAR (AC). This AC explains U.S. aviation weather products and services. It provides details when necessary for interpretation and to aid usage. This publication supplements its companion manual, AC 00-6, Aviation Weather, which documents weather theory and its application to aviation. The objective is to bring the pilot and operator up-to-date on new and evolving weather information capabilities to help plan a safe and efficient flight, while also describing the traditional weather products that remain.



IDENTIFY THE PROBLEM OR GAP TO FIND BEST SOLUTION





Time to validate

to

Time

dreamstime

The future is in artificial intelligence and XReality

“adaptive syllabus” where artificial intelligence (AI) updates the learning plan in real time to keep the student constantly in the zone of proximal development where they are challenged the optimal amount for learning.





**The best way to predict the future is to invent it.
It is a very good time to start inventing the
future of aviation training.**

**Join me on this journey
For more information contact:
Lori.Brown@wmich.edu**

