Georgia Institute of Technology

Vertical Lift Research Center of Excellence

Simulator Capabilities

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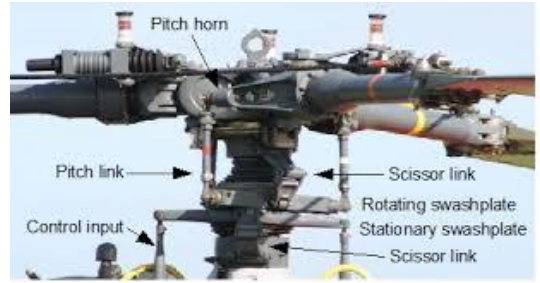
Research Areas

DVE

Shipboard Landings

Vibration & Load Analysis



MCLAWS

Handling Qualities

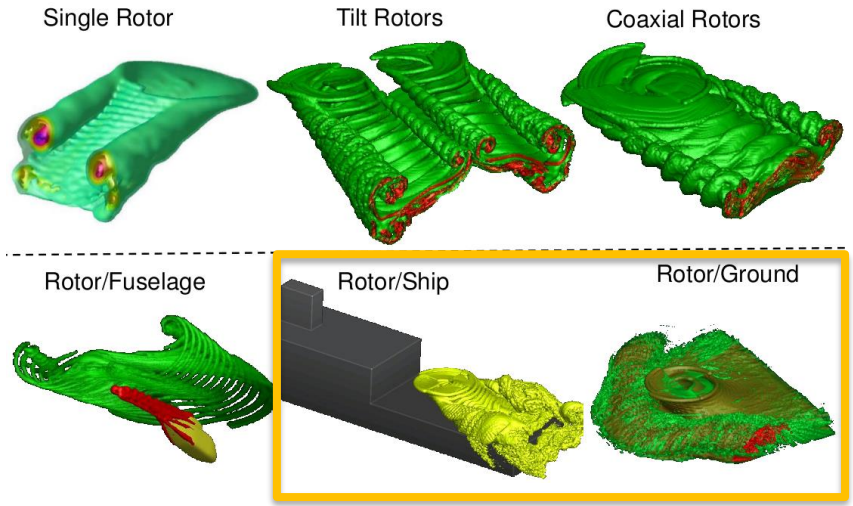
Inflow Modeling

Industry Leading Flight Dynamics Software Advance Rotorcraft Technology's Flightlab

Capabilities

- Multibody Dynamics
- GUI for modeling any aircraft
- Design & analysis capabilities
  - Able to incorporate MCLAWS
- Native ADS-33E Test and evaluation capabilities
- Real time simulation (already in use in Army & Navy simulators)
- Open architecture
- Hardware in the loop (actuators, engines, etc.)

Flightlab Vortex Particle Method



DVE Research Support

DVE Level 1 Handling Qualities

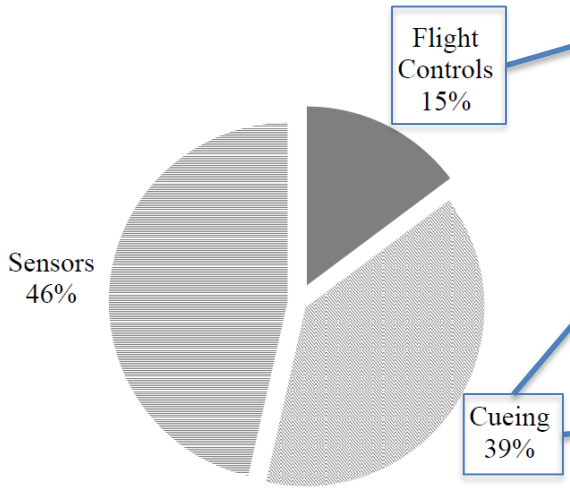


Fig. 14. Average maximum contribution of each technology sub-category

Goals

- 4-axis Control Loading (FAA Level D)
  - Lateral cyclic, Longitudinal cyclic, pedals, collective
- Improved Visuals
  - 270° 16’ diameter screen & HD projectors
  - Extreme Detail Image generation software for low altitude simulation
- Real Helicopter Cabin
  - Realistic instrument layout (MFDs)
  - Realistic visual obstructions
  - OH-58A/C Cabin Donated by

Bell Helicopter
A Textron Company

Simulate any Weather / DVE Condition

Able to simulate all weather conditions & self induced DVE: rain, snow, fog/clouds, smoke (forest fire), smog, dust, brown/white out, night, multiple sea states

Shipboard Landings Research

- Flightpath trajectory optimization
- VR/AR Pilot Cueing
- Multiple Sea States
- Day/Night/All Weather
- Air-wake Modeling

Image Generation High Detail at low altitude VR Capable

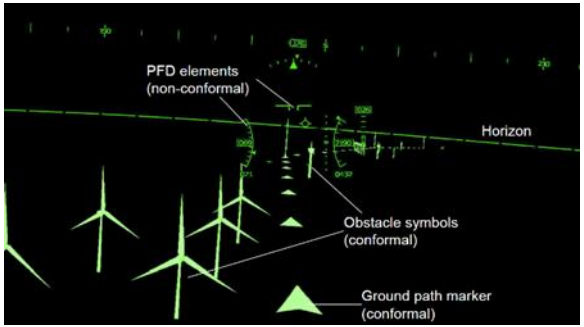
*Example of our IG software, video NOT taken in the GA Tech simulator

Simulate Multiple Avionics Displays

27” 4K monitor

Glass Cockpit Multi-Function Display Replication

- **conformal & non-conformal cueing**
- **BOSS symbology**
- **MUM-T display**



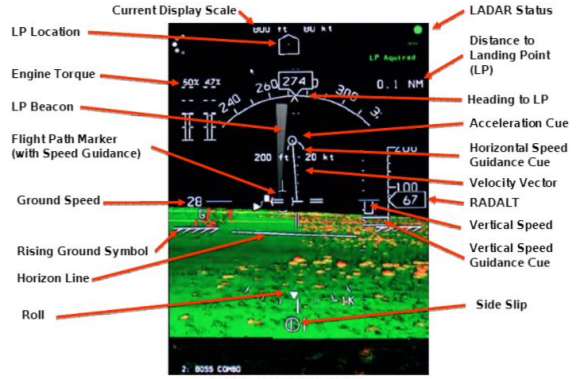
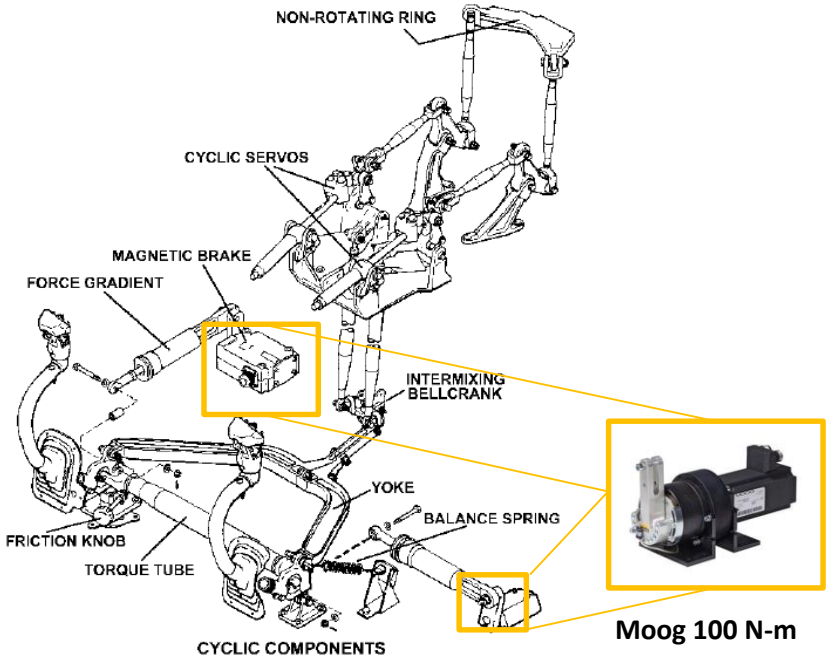


Fig. 33. BOSS Symbology

Modern Control Laws (MCLAWS) Research

4-axis 100 N-m Moog Control Loaders



Moog 100 N-m Control Loaders

- FAA Level-D Simulator control loaders
- Force Trim
- Multi-axis autopilot
- Haptic cueing
- DVE Level 1 handling qualities
- Human factors emergency procedures training

Advanced Optimal Control Trajectories in Real Time

NVIDIA QUADRO GP100—THE WORLD'S MOST POWERFUL WORKSTATION GRAPHICS AND COMPUTE CARD.

CUDA Cores	3584
Peak Double Precision FP64 Performance	5.2 TFLOPS
Peak Single Precision FP32 Performance	10.3 TFLOPS
Peak Half Precision FP16 Performance	20.7 TFLOPS
GPU Memory	16 GB HBM2
Memory Interface	4096-bit
Memory Bandwidth	717 GB/s
System Interface	PCI Express 3.0 x16
Display Connectors	DP 1.4 (4) + DVI-D DL (1) + Stereo

For Questions or comments contact:

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Qualified in the following Army Aircraft:

UH72A, UH60A/A+/L/M, Bell 206B