Agile, Innovative (e)VTOL Education for the US

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Multi-Pronged Approach for Education

• Advanced Education for Existing Engineers
  • Certificates, Professional Masters

• Expanding VTOL/eVTOL Education for Current Students
  • BS, MS, PhD
  • Agile and versatile to promote innovation

• Recruiting New Engineering Students for VTOL/eVTOL
  • New and future generations of US students will hail from South and Midwest with lower socio-economic levels and are more diverse (Munn et al, 2018, Journal of STEM Outreach)
A Unique Concept in VTOL Aviation Education Begins....

- *Vertical Lift Review Panel* sponsored by Asst. Secretary of the Army for RDA 1980 recommended “long term research and education program at respected universities.”

- A University-Based Rotorcraft Center of Excellence (RCOE) was established in 1982 through the Army Research Office.

- Georgia Institute of Technology, University of Maryland and RPI awarded RCOEs in 1982 for up to five years (~$4M/year)
Today’s VLRCOEs

• Broad collaboration across the US and abroad
• Intercenter teaming on tasks encompassing aeromechanics, design, autonomy and more

Georgia Tech
- Univ of MI
- Purdue
- Ohio State
- Washington U
- UT – Arlington
- Iowa State
- U. of Liverpool (UK)
- Cambridge (UK)

University of Maryland
- UT—Austin
- Texas A&M
- US Naval Academy
- RPI
- TU Munich (GR)
- Technion (IS)
- Roma Tre (IT)

Penn State (since 1996)
- Univ of TN
- UC Davis
- Embry-Riddle
- Technion (IS)
Today’s VLRCOE Program

- Total Funding remains at ~$5M/yr Government funds (Army, Navy, NASA)
- Significant cost share provided by University Centers (a challenge with COVID-19!)
- Competitive effort every five years
- Annual reviews of 40-50 government and industry representatives with significant guidance in research roadmaps
- Primarily focused on student support (stipend+medical+tuition)
- Acts as seed funding to attract other Vertical Lift research, ~4-8x
- Agile and innovative educational programs at both undergraduate and graduate levels in all matters related to Vertical Lift, including UAM and eVTOL
Proposed Approach

Cost-effective to build upon the VLRCOE’s and their partners:

• Highly ranked VTOL education with new (e)VTOL courses including energy, aerospace, and infrastructure
• Undergraduate certificates in VTOL/(e)VTOL
• Cooperative education and internships
• Incentives for undergraduates to enter the (e)VTOL workforce or go to graduate school in (e)VTOL: (e)VTOL Scholars
• Form a collaboration for shared graduate and professional education resources
• Expanded graduate research funding

Slides will be posted on www.vtol.org/workforce