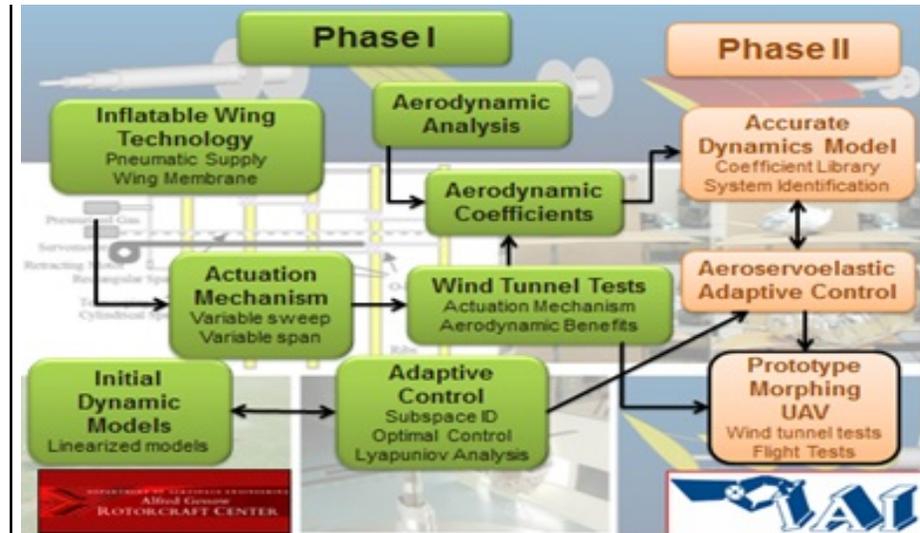


PI: Peter Chen

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### Identification and Significance of Innovation

This effort aims to design and demonstrate morphing UAV in wind tunnel as well as flight tests, to enable multiple mission objectives on a single platform, as well as achieve higher aerodynamic efficiencies throughout the mission. The control system for morphing aircraft will also be developed, based on adaptive control to enable robust and stable control laws during transition mechanisms, while accounting for aeroservoelastic effects.



Estimated TRL at beginning and end of contract: ( Begin: 3 End: 5 )

### Technical Objectives and Work Plan

Proof-of-concept actuation mechanism demonstrated in wind-tunnel and adaptive control system design

- Develop inflatable wing morphing mechanisms for sweep and telescoping
- Develop dynamic models for control system design
- Design adaptive control system techniques
- Demonstrate actuators in wind-tunnels and controls in simulation
- Develop library of aerodynamic coefficients for more accurate dynamics modeling

### NASA Applications

The proposed technology directly contributes to the Fundamental Aeronautics Program's goal of revolutionary aircraft concepts, and indirectly to the Inflatable Wing Program, extra-terrestrial exploration programs and aeroservoelastic control programs.

### Non-NASA Applications

The DOD can directly use this technology for programs such as DARPA's Morphing Aircraft Structures as well as transition the technology to their UAV platforms. The commercial sector can also use it for smaller UAVS.

### Firm Contacts

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