

Analysis & Assessment Campaign
Developing Tools, Techniques, and Methodologies
Ballistics SLV

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Research Objective

Fundamental research to enable survivable and low-maintenance vertical lift vehicle platforms and subsystems meeting the performance requirements of the future Army.

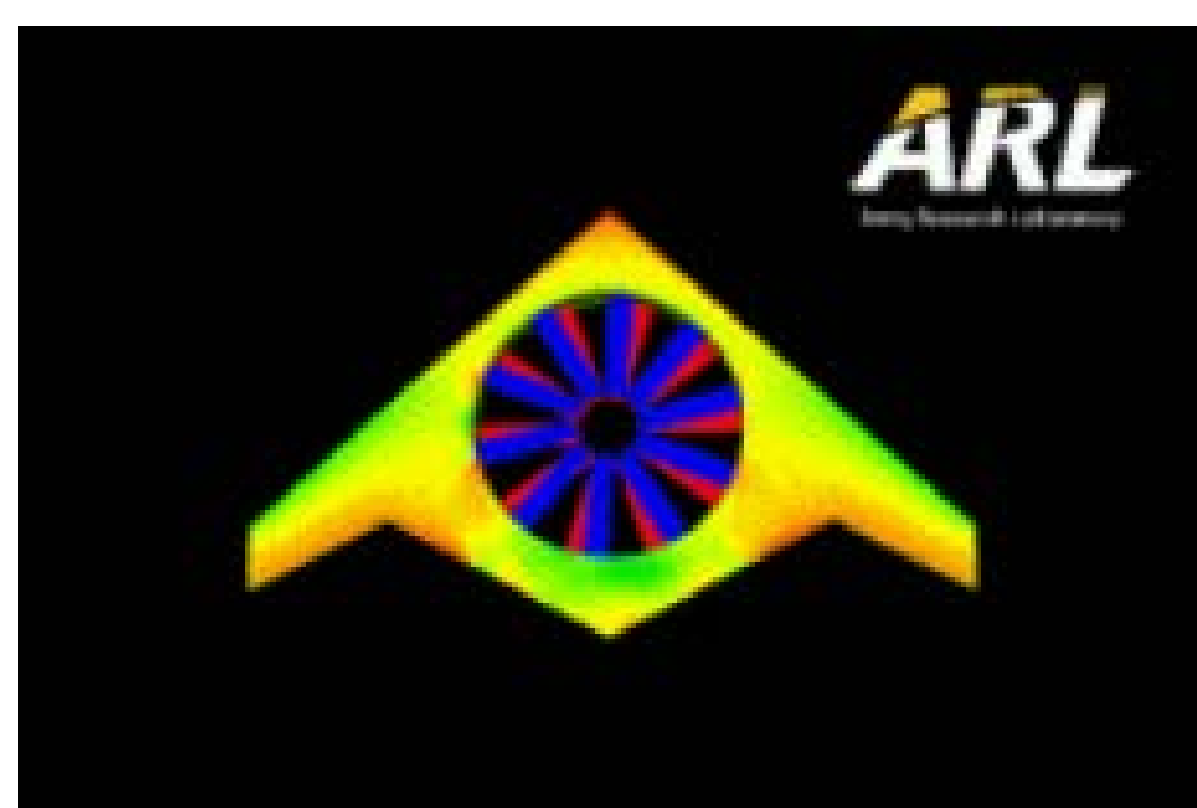


Needed: Survivable Platforms and Technologies

Challenges

Lack of innovative tools and technologies to:

- Conduct trade-space design analyses of competing and complex technologies
- advance material properties to enable multi-functionalities,
- capture damage indication prior to onset of physical degradation



Needed: Micro-to-Macro Modeling and Analysis Techniques

ARL Facilities and Capabilities Available to Support Collaborative Research

- Extensive ballistic experimentation facilities
- Unique component and subsystem loading
- Inventory of rotorcraft and parts
- Software development and visualization
- Material prototyping capabilities
- Vertical lift design and aeromechanics expertise
- Extensive computational resources



Extensive ballistic facilities and capabilities



High Frequency 6-DOF Testing



Unique component loading

Complementary Expertise / Facilities / Capabilities Sought in Collaboration

- State estimation for complex nonlinear systems and probabilistic risk assessment.
- Physical properties of complex materials and structures including fatigue, damage mechanics, embedded sensors, self-healing materials, and multiscale modeling.
- Advanced analysis and data visualization techniques.

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