

The Hummingbird
(Technical Report)

**The Joint Strike Fighter and the Failure of Cost Accountability in U.S. Military
Contracting**
(STS Research Paper)

An Undergraduate Thesis Portfolio
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by

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Preface

In weapons procurement, the U.S. Armed Forces face cost efficacy tradeoffs which are complicated by political influences.

Neither the aging A-10 nor the expensive F-35 can optimally serve the U.S. Air Force's interest in a cost-effective close-attack aircraft that can provide close air support to ground forces in missions now conducted only by attack helicopters. An initial design configuration for a new close-attack aircraft was down-selected from multiple design concepts inspired by state-of-the-art attack aircraft, including the A-10 and A-29. Software methodologies were used to perform trade studies to optimize the initial design, including computational fluid dynamics, 3D modelling, gas turbine and rotor simulation, and flight optimization. The final design represents a light attack aircraft that has been validated to meet constraints, predicted to have a competitive cost, and designed to have improved on existing light attack aircraft in service today.

The F-35 Lightning II is a multi-role fighter designed to fulfill missions across every branch of the Armed Forces. However, since the project's inception in 1996, this purported aircraft of the future has been plagued by a history of severe cost overruns and production delays that have made the F-35 controversial. This history reveals cost accountability in U.S. military contracting. The Department of Defense's commitment to the F-35 program reflects unhealthy relationships between defense contractors and Congress that impair cost control. The department must reform these relationships to improve cost efficacy in procurement.

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