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Application of the Early Lifecycle Cost Estimation Model: A Case Study Analysis of the MQ-8 Fire Scout

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Abstract: Currently the Department of Defense is plagued by its ability to acquire complex systems at cost and on schedule. (Carter, 2010). Addressing this challenge the authors developed the Early Lifecycle Cost Estimation (ELCE) Parametric Model in the fall of 2016 as a cost complement to Engineer Research Design Center (ERDC) - Engineered Resilient Systems' (ERS) *TradeBuilder* – a suite of high-powered computer-aided alternative design tools. This paper specifically demonstrates the ELCE model using cost data from the MQ-8 Fire Scout, an Intelligence, Surveillance, and Reconnaissance system. Following methods similar to those used to generate COCOMO II and COSYSMO, this paper seeks to establish a proof of concept for each parameter therefore laying the foundation for future work. Uniquely, engineering inputs available pre-Milestone A – specifically products that are conceptual in nature – are leveraged. This demonstration's estimate was within 1% of actual cost; however, this accuracy is limited but should serve as a metric of feasibility.

Keywords: Acquisition; Engineered Resilient Systems; Lifecycle; Costing; Hardware Estimation; Software Estimation; Systems Engineering Estimation; Project Management; Project Management Estimation; Interoperability; Interoperability Estimation; COSYSMO; COCOMO II; Cost Estimation Relationships