

### ABSTRACT AND BIOGRAPHY

#### **Conceptual Design Optimism, Cost and Schedule Growth Effects**

This presentation updates a previous effort investigating how the evolution of initial concept designs are related to the cost and schedule growth of missions. The paper will show examples of the evolution of a design, and its respective cost and schedule estimates, throughout its lifecycle for twenty recent historical NASA missions. The issues behind the cost and schedule growth of these missions are varied, but in part may be attributed to systems that have changed substantially from those examined at initial concept through to launch. In addition, historical resource growth is investigated for a variety of missions to provide guidelines and lessons learned to be used during the initial conceptual design stage for future development missions. The data developed for the paper should help both project managers and cost and schedule estimators to develop more robust estimates earlier in the design process.

#### **Claude Freaner**

*Program Manager of Discovery and New Frontiers Programs*  
NASA Marshall Space Flight Center

Mr. Claude Freaner has worked in the cost estimating field in industry and at NASA Headquarters for the last 30 years. As part of his duties, Claude is responsible for independent cost assessment of proposed and ongoing missions within NASA's Science Mission Directorate. Claude recently received the 2006 NASA Cost Estimating Leadership Award which is given "to provide recognition to an individual who has brought leadership and inspiration to the space cost community in activities such as championing a cause, leading and mentoring others in the space cost community, acting as a strong cost advocate, and garnering the respect of his cost peers." Claude has a Bachelor of Science in Mathematics from the University of Idaho, a Masters in Business Administration (MBA) in Management Science from San Diego State, certifications in Cost Analysis and Program Management and is a Certified Parametric Practitioner.

#### **Bob Bitten**

*Senior Project Leader*  
The Aerospace Corporation

Mr. Bob Bitten works at The Aerospace Corporation and has conducted independent cost estimates for NASA proposal evaluations and independent assessments for a variety of different NASA missions and organizations. Bob is a winner of the President's Award, The Aerospace Corporation's highest honor, for his effort in assessing the cost effectiveness of different alternatives in the Hubble Space Telescope Remote Servicing Module (HST RSM) Analysis of Alternatives (AoA). Bob also recently won the NASA Cost Estimating Support Contractor of the Year Award for 2007 that is awarded to recognize an individual who has provided "outstanding contractor support to the NASA cost estimating community and significantly contributed to the field of cost estimating." Bob has a Bachelors degree in Industrial and Systems Engineering from the Georgia Institute of Technology, and an MBA from Pepperdine University.

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**Debra Emmons**

*Senior Systems Director*  
The Aerospace Corporation

Ms. Debra Emmons works at The Aerospace Corporation where she has developed a unique, quantitative schedule analysis tool using historical data. She has used this tool on several NASA proposal evaluations and independent assessments. In 2006, Ms. Emmons was also a winner of The Aerospace Corporation's President's Award, for her part in utilizing her unique methodology to conduct schedule analysis that was critical to the conclusions drawn in the HST RSM AoA. Debra is also a winner of The Aerospace Corporation's Woman of the Year (WOTY) Award for 2007 which is awarded to Aerospace women who "demonstrate outstanding professional achievement, leadership, community involvement, and initiative". Debra has a Bachelors and Masters Degree in Electrical Engineering from Cornell University and an MBA from the Imperial College of London.