



NASA SBIR 2008 Phase I Solicitation

S4.02 Rapid End-to-End Mission Design and Simulation

Lead Center: ARC

Participating Center(s): GSFC

This subtopic addresses the need to rapidly and efficiently analyze, design, simulate, and evaluate competing mission concepts.

The traditional mission design process involves multiple tools and trades, resulting in design data being generated and stored in various proprietary formats, making iterative trades cumbersome. Current mission design and simulation environments require dedicated personnel that execute mission simulations for mission projects, but at a significant cost to project budgets. For efficient mission design and simulation activities, particularly for small satellites and other missions with small budgets and cost margins, there is a need for user-friendly tools that will provide seamless data flow between simulation environments with little overhead.

This subtopic seeks proposals for a toolset that shall integrate legacy engineering software with user-generated design and simulation tools into a single, user-friendly environment. The toolset shall automate the flow of data between analysis, design, and simulation applications with minimal user manipulation. The data shall also be preserved through the various design phases from initial concept to execution.

Data resources to be linked include cost tracking spreadsheets, task plans, risk management databases, requirements databases, technical performance metrics and margins sheets, top level and WBS element schedules, and standard monthly status reports from WBS elements. The tool should be easily scalable for large or small projects and the number of WBS elements and features included or excluded for a given project should be user-selectable. User and group permission and access controls are required.

Research should be conducted to demonstrate technical feasibility during Phase 1 and show a path toward a Phase 2 hardware and software demonstration, and when possible, deliver a demonstration application for NASA testing at the completion of the Phase 2 contract.

Phase 2 emphasis should be placed on developing and demonstrating the technology under relevant test conditions. Additionally, a path should be outlined that shows how the technology could be commercialized or further developed.

Proposals should show an understanding of one or more relevant science needs, and present a feasible plan to fully develop a technology and infuse it into a NASA program.Â

