

# Faster, Better, But Maybe Not Cheaper

Class D and the Project Management, Systems Engineering and Mission Assurance Costs Conundrum

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## Why Class D?

- NASA Class D missions are becoming increasingly prevalent, and typically are lower cost missions
- In prior research, we found that Class D PM/SE/MA costs do not fall into the same cost estimating relationship range to hardware cost, compared to other mission classes



## Motivation

- Requests for quick turnaround cost estimates have prompted technical teams to develop labor estimates for PM/SE/MA WBSs along with hardware estimates
- Management and other stakeholders have posed questions during past proposal reviews regarding PM/SE/MA estimates
- Need for validation of proposal estimates, both BUE and parametric

## Development of the Model

- Dataset includes internal Class D missions and 7120.8 projects
- User selects project class, FY\$, project target cost or cost cap, and schedule durations
- Internal staff labor categories are used to calculate rates

<b>Project Class</b>	Class D	Select Class D or 7120.8 Missions
<b>Fiscal Year \$</b>	2025	Select FY\$ for estimate
<b>Total Cost Cap/Target (\$M)</b>	\$ 150	Missions over \$100M - strongly advised to include the DPM role for co.

Project Phase	Schedule		Duration (mo)
	Start	End	
Phase B	6/1/2026	6/30/2027	13.1
Phase C	7/1/2027	10/31/2028	16.3
Phase D	11/1/2028	11/30/2029	13.1

Project Management	Staff Level	Notes
PM	S2	Includes PM and Administrative functions
Deputy PM	S1	Leave staff type blank if not planning on having a Deputy PM
FM	A2	Financial management and reporting
Planner/EVM	A2	Planning and EVM functions

Systems Engineering	Staff Level	Notes
SE	S2	Includes general Systems Engineering functions
SE other	S1	Includes other functions such as: Component Engineering, Reliability,

Mission Assurance	Staff Level	Notes
MA	S2	Includes general SMA functions
MA other	S1	Includes other functions such as: Configuration Management, Softwa

- Model output shows a cost estimate at the selected phases and in total, at each desired position (example below excludes proprietary details)

Estimate by Phase (\$K in chosen FY)	WBS	Staff Level	Phase Durations			FY\$K 2025 Total
			13.1 Phase B	16.3 Phase C	13.1 Phase D	
<b>Program Management</b>						
	PM	S2	\$ -	\$ -	\$ -	\$ 2,060
	Deputy PM	S1	\$ -	\$ -	\$ -	\$ 605
	FM	A2	\$ -	\$ -	\$ -	\$ 257
		A2	\$ -	\$ -	\$ -	\$ 347
	<b>Total PM WBS</b>		\$ 825	\$ 1,376	\$ 1,068	\$ 3,269
<b>Systems Engineering</b>						
	SE	S2	\$ -	\$ -	\$ -	\$ 2,943
	SE other (Reliability, Component Eng, etc.)	S1	\$ -	\$ -	\$ -	\$ 256
	<b>Total SE WBS</b>		\$ 687	\$ 1,388	\$ 1,125	\$ 3,200
<b>Mission Assurance</b>						
	MA	S2	\$ -	\$ -	\$ -	\$ 821
	MA other (Software Assurance, Config Mgmt)	S1	\$ -	\$ -	\$ -	\$ 217
	<b>Total MA WBS</b>		\$ 214	\$ 368	\$ 457	\$ 1,038
	<b>Total PMSEMA Estimate</b>		\$ 1,726	\$ 3,131	\$ 2,649	\$ 7,506

## Inclusion of 7120.8 Projects

- In the process of building this model, there was interest in having the same estimating capability for 7120.8 class projects
- 7120.8 projects are typically grants or cooperative agreements that have less rigorous requirements than those of Class D missions
- In general, 7120.8 missions do not have hardware deliverables
- We added several 7120.8 missions to the model dataset, and now have the capability to select them as an option in the model input

## Validation and Future Work

- Model outputs were validated against actual costs from relevant missions from both Class D, and 7120.8 project classes
- Our goal is to add more of these projects to the dataset as we get new data, and continue the validation process against actual cost

