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Model Based Systems Engineering and Its Impact on Small and Medium Sized Businesses

Recently, the Department of Defense (DoD) has shifted to requiring Model Based Systems Engineering (MBSE) usage on research & development and sustainment programs. This means that the government is developing a method of acquisition program solicitations using the MBSE environment as the solicitation medium rather than a flat specification and reference document. Small and medium sized businesses will have an obligation to respond to solicitations by building proposals in a model, linking the requirements base to a functional and physical model, and submitting the model as a proposal.

While some small and medium businesses currently have systems engineering groups that are able to develop these models, strategic partnerships will also be necessary to successfully bid and win government opportunities. These strategic partnerships will most likely take the form of contracting MBSE expertise on a project or even a long-term basis without the need for a full-time MBSE person or team. Other options include contracting external systems engineering experts to mentor and train organic staff until they are proficient.

An MBSE model in summary contains detailed context diagrams, presenting inputs/outputs, functionality, constraints (size, weight, power, cooling), performance, and interface details. Because context will be required at the subsystem or configuration item level, small and medium-sized businesses will be able to effectively bid at the subsystem level in partnership with a prime integrator. There is also good news for large companies and integration primes as they will be able to address technology gaps filled by niche expertise (from innovative small and medium sized businesses) that enable multiple options offering them improved supplier resiliency.

Overall, the Government's MBSE shift provides amazing opportunities to U.S. companies to stay competitive in a global economy.