**Data-driven Systems Engineering: Turning MBSE into Industrial Reality**

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1. **Introduction**

This paper expands upon a paper presented at the SECESA in Madrid 2016 [1], which showed that although some companies in the space industry are in the process of moving from a document-based systems engineering approach to MBSE, the existing MBSE tools are currently not widely adopted due to their complexity and inflexibility. The proposed solution was a browser-based, collaborative engineering tool which ensures consistent data throughout the whole project. This paper goes further and presents the need for a new data-driven systems engineering approach to spread the use of MBSE in the industry.

1. **Data-driven Systems Engineering**

One of the reasons that MBSE is not yet widely adopted by the industry is that while it provides good representation form of models, it quickly becomes too complex and inflexible for practical use. Moreover, the underlying data and calculations for verification and analysis of models is often overlooked, which leads to problems with data inconsistency and duplication. Data-driven systems engineering (DDSE) is proposed to and enable a wider spread of MBSE throughout the industry. Here, data-driven refers to an approach where engineering data and associated structure, links and connections constitute the foundation of the systems engineering process.

1. **A Browser-based, Data-driven Systems Engineering Tool**

As a practical example, the evolution of the previously presented browser-based, data-driven systems engineering tool, Valispace, is presented. With this tool, a common and consistent dataset of engineering parameters and formulas is maintained throughout a project. When any parameter changes, the effect immediately ripples through the system and other, dependent parameters, as well as documentation, are automatically updated. The data is structured in simple models, which brings the majority of the benefits of MBSE but with almost all complexity abstracted from the user. The dataset serves as a ‘single source of truth’ throughout the entire product design lifecycle, which can easily be integrated with any further specialized tools or models.

1. **Conclusion**

In conclusion, the proposed data-driven systems engineering approach and the implemented browser-based collaboration tool is needed to turn MBSE to industrial reality by ensuring that connected data is a central part of the engineering process.

1. **References**

[1] Lindblad, L., Witzmann, M., and Vanden Bussche, S.: Systems Engineering from a Web Browser: Turning MBSE into Industrial Reality, SECESA 2016.