

## **Defining a Holistic Approach for Model-Based System Engineering: Paradigm and Modeling Requirements**

**Authors :** Hycham Aboutaleb, Bruno Monsuez

**Abstract :** Current systems complexity has reached a degree that requires addressing conception and design issues while taking into account all the necessary aspects. Therefore, one of the main challenges is the way complex systems are specified and designed. The exponential growing effort, cost and time investment of complex systems in modeling phase emphasize the need for a paradigm, a framework and an environment to handle the system model complexity. For that, it is necessary to understand the expectations of the human user of the model and his limits. This paper presents a generic framework for designing complex systems, highlights the requirements a system model needs to fulfill to meet human user expectations, and defines the refined functional as well as non functional requirements modeling tools need to meet to be useful in model-based system engineering.

**Keywords :** system modeling, modeling language, modeling requirements, framework

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