

Taking Advantage of the Model: Application of the Quantity, Units, Dimension, and Values Standard in Concurrent Spacecraft Engineering

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Abstract. Designing a spacecraft involves many experts from different domains. In the early design phases they are brought together to discuss the spacecraft in a short period of time. The elements and building blocks the individual engineers want to use are stored and described in a shared system model provided by a software framework. A lot of features like the masses or dimensions are described using parameters. Due to the various domains and individual preference, many different units are used, leading to mistakes, distraction and misunderstandings caused by unit conversions. Our paper describes a pragmatic approach how the QUDV is integrated into an existing system model. This allows taking advantage of it by automatically analyzing the unit consistency as well as performing automatic conversions. The presented work shows that with a profound integration into the existing software framework, the engineers can overcome the error-prone task of unit checks and conversion problems.