A MARTE Extension for Global Scheduling Analysis of Multiprocessor Systems

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Abstract: Real-Time Systems are subject to Hard/Soft temporal constraints. Besides, a tasks' scheduling step is required to meet the maximum of deadlines, for which there are different scheduling algorithms to do. However, nowadays real-time systems represent a serious issue for the worldwide industry due to their growing complexity. Indeed, since they are more susceptible to failures and deficiencies of development, it is crucial to rely on high level development methods. In this context, some researchers have proposed scheduling analysis within the new profile Modeling and Analysis of Real-Time and Embedded systems (MARTE), whose profile supports both monoprocessor and multiprocessor scheduling algorithms. While supported multiprocessor scheduling algorithms are part of the partitioned approach, global approach algorithms have not been backed by MARTE yet. In the present paper, we seek to improve the MARTE stereotypes meta-models to establish scheduling algorithms for the global approach.