

Abstract

Ontology is a type of a semantic structure in which knowledge of the chosen domain is modeled by means of a set of concepts and relationships among them. In particular, machine interpretable specification with a formal semantics in ontology enables intelligent agents to interpret the context automatically and making implicit (hidden) knowledge explicit. These basic features make ontology amenable for knowledge intensive applications. Satellite Launch Vehicle (LV) is a stable, knowledge-intensive domain. Life cycle management of LV (or any of its subsystems) consumes considerable human efforts and time. The activity is highly dependent on human expertise and hence error-prone. Taking inspiration from similar applications in other fields, it is felt that if the knowledge associated with LV domain can be modeled using an ontology, then it would reduce the dependency on human expertise. Also, it would increase the scope for the automation of the process concerned and would hence reduce the time, efforts and occurrence of human made errors. The performance of LV is assessed using mission simulations. The simulation software has to be tailor-made based on specific set of requirements. The requirements change across mission to mission and are also dependent on the fidelity of the required simulations. In this background, we develop ontologies, using OWL-DL and SWRL standards, to represent the knowledge associated with simulation requirements, subsystems, models and software modules of simulation studies for launch vehicle missions. The seminar will present the details that will clearly reflect the conceptualization of knowledge, alternate approaches, the design and development of ontologies. Also, the details of a framework envisaged to extract the relevant knowledge automatically from OWL-DL ontologies will be presented.