

## **ONTOLOGY-DRIVEN INTEGRATION OF CAD/CAE APPLICATIONS: STRATEGIES AND COMPARISONS**

**ABSTRACT:** In this paper we present a detailed exploration of ontology-driven approaches and strategies for integrating product data between CAD/CAE applications. We structure the ontology model into three layers: General Domain Ontology, Domain Specific Ontology, and Application Specific Ontology. In particular, Application Specific Ontologies are built for PRO/E, CATIA, and a virtual assembly design tool called VADE. This allows the integration processes to be demonstrated for a) two applications in the common domain of product design, and b) two applications in different domains, one in the product design domain and the other in an assembly simulation domain. In addition, these ontology-driven strategies are compared with two other approaches. The first study focuses on the knowledge modeling aspect and compares the ontology approach with a standard modeling language, UML. The second study focuses on data integration and translation aspect and compares the ontology-driven approach with a traditional one. It is concluded that an ontology-driven approach is superior for solving heterogeneous data problems involving multiple applications by managing data on semantic level.