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# Towards a Unified Heliophysics Data Environment: Semantic Interoperability and Knowledge Discovery

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NASA's Heliophysics Data Environment (HPDE) is actively developing a number of data discovery, visualization, and analysis systems. A prime objective of the HPDE is seamless data discovery and access irrespective of storage format, access protocol, or naming convention. We present our ongoing efforts in this area. Specifically, we discuss the conversion of a community accepted metadata model (SPASE) into a formal ontology. We describe the role this ontology plays in data discovery and integration in the web interfaces of two HPDE Virtual Observatories (VHO and VMO). Moreover, end-user data interoperability is illustrated through the use of semantics in client applications. We present a number of semantic interoperability and knowledge discovery scenarios, all made possible by mid-weight semantics.