



The Production Virtual Solar-Terrestrial Observatory: Semantic Web in Practice.

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The Virtual Solar-Terrestrial Observatory (VSTO) is a production, scalable environment for searching, integrating, and analyzing solar, solar-terrestrial and space physics databases distributed over the Internet. VSTO has addressed a variety of technical challenges concerning representations and interoperability of data, access, and usability, reuse and interfacing with existing services, and adding diverse data sources and scalability. The formalization of semantics using ontologies and their encodings for the internet (e.g. OWL - the Web Ontology Language), as well as the use of accompanying tools, such as inference and query opened up both a substantial leap in options for interoperability and the need for formal development principles to guide ontology development and use within modern, multi-tiered network data environments. In this presentation, we outline the formal methodologies we utilize in the VSTO project, the currently developed use-cases, ontologies and their relation to existing ontologies (such as SWEET). We also present aspects of the currently functioning VSTO web portal and its underlying technical infrastructure. VSTO is an NSF-funded joint effort between the High Altitude Observatory and the Scientific Computing Division at the National Center for Atmospheric Research (NCAR) and McGuinness Associates Consulting.