Semantics data framework architecture serving multiple communities

Spectrum of Semantics and Knowledge Representations
- **Declarative** - The what of knowledge representations - ontologies
- **VSTO** used this form (with reasoning) almost exclusively
- **VSTO** also used semantic query (filtering) with SPARQL
- PML is an ontology
- Data integration needs this
- **Procedural** - The how (the process) of knowledge representation (involves some degree of skill, which increases as a result of practice) - rules (and logic)
- SESF needs this form, especially to mediate service choices and needs beyond the current data science interface, we will present plans for an upper-level semantic eScience framework that utilizes leading edge technologies and tools and the sustainable software path for the future (certain) technical advances
- **Generalization** of the current data science interface, we will present plans for an upper-level interface suitable for use by clearinghouses, and/or educational portals, digital libraries, and other disciplines.
- **Acknowledgement**: NSF/OCI Strategic Technologies for Cyberinfrastructure (STCI)

Frameworks v. Systems
- **Prior to 2005**, we built systems, **now frameworks**
- Rough definitions
- Systems have very well-define entry and exit points. A user tends to know when they are using one. Options for extensions are limited and usually require engineering
- Frameworks have many entry and use points. A user often does not know when they are using one. Extension points are part of the design
- You don’t have to agree, this was our view

Virtual Solar-Terrestrial Observatory (VSTO) utilizes leading edge knowledge representation, query and reasoning technologies to support knowledge-enhanced search, data access, integration, and manipulation. It encodes term meanings and their inter-relationships in ontologies and uses these ontologies and associated inference engines to semantically enable the data services (NSF).

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