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Interoperable Solar Data and Metadata via LISIRD 3

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Red stars denote interoperability points

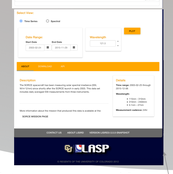
Web Applications

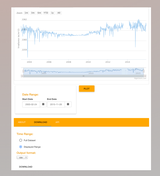
metadata authoring capabilities

Service discovery services

Dataset discovery, metadata harvesting services

information is pulled from LEMR to populate page templates





Current download options: csv, txt, json, bin, dods

data are requested from LaTiS in JSON format

Metadata Access

Machine readable metadata via LEMR
Multi standard compliant

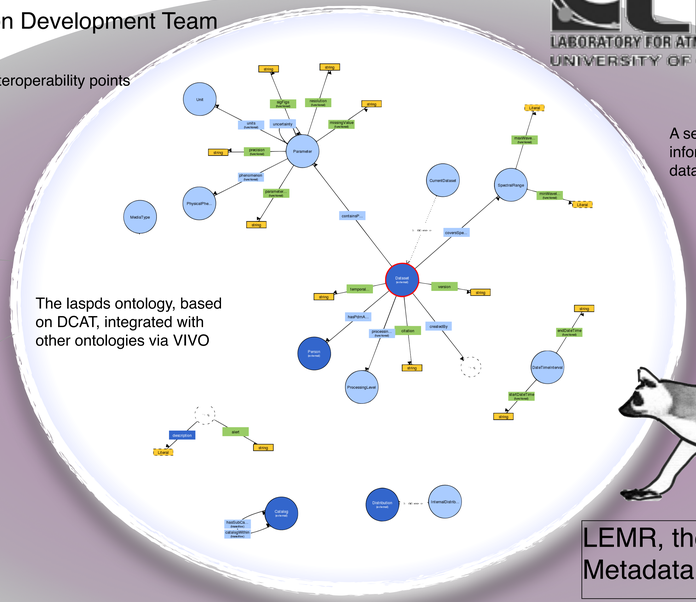
A SPARQL endpoint for direct database queries

SPARQL

Metadata records in various formats can be generated from the semantic database and published

SPASE record

ISO 19115 record



The laspds ontology, based on DCAT, integrated with other ontologies via VIVO

A semantic database of information about the datasets served

LEMR, the LASP Exended Metadata Repository

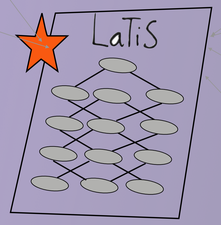
service interfaces/cyberinfrastructure hooks

Data Access

Machine readable data via LaTiS
Uniform API

OPeNDAP compliant, intuitive, RESTful API

http://lisird-dev:8090/lisird3/latis/sorce_tsi_24hr_l3.json?time.tsi_1au&time%3E=2008-05-08T18:40:21.395Z&time%3C=2009-04-05T07:53:51.480Z



On demand, server side functionality:
reformatting, subsetting, aggregation, application of filters to transform and analyze, time reformatting

Extensibility

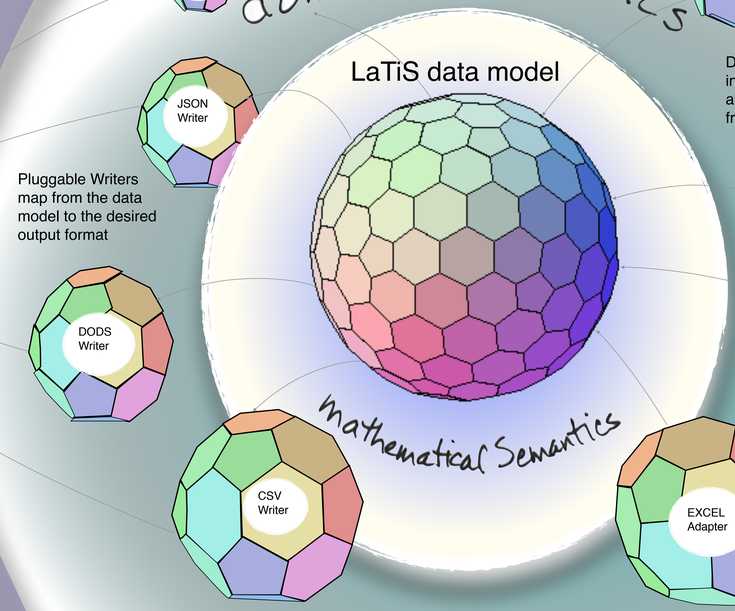
To integrate a new dataset
1) Write a TSML descriptor to describe the new dataset
2) Reuse an existing Reader or Adapter, or for custom datasets, write a new adapter

E.g., generally columnar ASCII dataset can be added in 5 minutes.

To provide a new output format, reuse and existing writer, or for custom outputs, write a new Writer for that format.

LaTiS data access

domain semantics



Pluggable Writers map from the data model to the desired output format

Domain semantics are incorporated at higher levels of abstraction in the software framework

Pluggable Readers and Adapters map from the input source to the data

Time Series Markup Language descriptors describe each dataset and its adapter

db.tsml

historical_tsi.tsml

spidr_ssn.tsml

The data model uses domain agnostic, mathematical semantics, e.g., functions of independent and dependent variables. This provides great flexibility in representation and computation. E.g., the domain neutral representation of

$$\text{temperature} = f(\text{lat}, \text{lon}, \text{time})$$ is

$$r = f(a, b, c)$$

Relational Databases

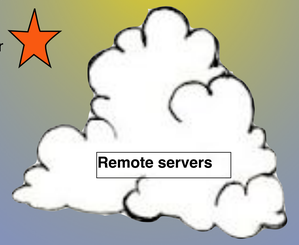
File systems

Implemented formats
binary, ASCII, Excel, log files, NetCDF

Serve any data having a URL

Data

Current remote servers
- SPIDR
- NSO
- Debrecen Heliophysical Observatory (DHO)
- IMAP
- iCal
- leap second server



Remote servers