SimDAP
Simulation Data Access Protocol

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Current Theory Standards

SimDB Data Model Is the data model describing simulations, including protocols (software), experiments (simulations), and snapshots (time based output).

SimDB Will be a service specific for querying a database populated with objects based on the data model.

SimDAP Is a second generation DAL typed service interface, providing access to existing and virtual simulation datasets.

SimDAP Goals

- Provide a service standard for retrieving simulation data
- Mimic other second generation DAL protocols (e.g., TAP, SSAP, etc.)
- Low technical overhead for implementation

Important Data Model Elements

Protocol A piece of software (Enzo, Gadge, halo finders)

Experiment (i.e., Simulation) the process of running a piece of software with a set of input parameters.

Snapshot Results of the simulation at some point in time. Could be in files or a database.

- Data model is still evolving
- Will likely add Project to collect multiple Experiments and Protocols

Minimum Service Operations

GetCapabilities VOSI compliant response

GetAvailability VOSI compliant response

Download Return access URLs to unmodified simulation results

Preview Return access URLs to existing or virtual images or down-sampled data

Cutout Return access URLs to files containing a spatial subset of the data (i.e., REGION)

List (Tentative) Return access URLs to XML instance documents describing the Experiments being served.

- Will provide asynchronous operations via UWS, when available.
- Service can extend these to provide custom operations (volume rendering, projection, etc.).

Basic Input Parameters

EXPERIMENT The simulation of interest

SNAPSHOT The time step of interest

REGION Spatial region used when doing a cutout

PROPERTIES Properties of the data desired (e.g., density, temperature, position)

Sample Queries

Simple Download

```
$<service-baseURL>/sync?REQUEST=download&
EXPERIMENT=lca/sca/clrc00&SNAPSHOT=clrc00_0030
```

Cutout with Properties

```
$<service-baseURL>/sync?REQUEST=download&
EXPERIMENT=lca/sca/clrc00&SNAPSHOT=clrc00_0030&
REGION=0.25/0.5,0.25/0.5,0.0/1.0&PROPERTIES=Density
```

(Exact details of parameters TBD.)

Theory Discussion Items

- How much metadata to provide in response?
- How much of a description of the underlying file structure is needed?
- How do Experiment, Snapshot compare to the SSA Collection?

Attendance by DAL members at Thursday's Theory session on SimDAP would be appreciated.

Future

- Resolve discussion items (this week)
- Draft Note (also this week)
- Present Working Draft to DAL WG for review (1 - 2 months)