Opportunities for Interoperability

- Anytime we have communication or storage.
  - Observation requests by the students.
  - Archiving data.
  - Querying data.
  - Providing services (object identification, etc.)

- Goal: A schema integrating micro-schemas for all the above.

Observation Requests

- Coordinates
- exposure time
- dark frame
- corrected (yes or no)
- flat field corrected (yes or no)
- required filters
- Etc.

An XML stream specifying the above can be generated by the software the students use to make their requests.

Metadata for the Archive

- Keep the Observation Request.
- Additional metadata tags related to the observation.
  - Properties of the telescope; properties of the exposure.
- Tags related to low level manipulation by the students.
  - Superimposition, etc.

Querying the Archive

- An inferencing engine on the back end.
- The goal is to support content based queries.
  - We'll be happy to prove the concept.

- Step 1: Construct a small ontology of query types.
- Step 2: Determine the inference rules needed to support the desired queries.

Services

- Dynamically identifying and composing services is one of the big deals of the semantic web.
- In our case, many services will be provided by Dr. Keating's students: motion detection; Bayesian techniques; etc.
- We can all also pull in services from other sources.
  - Collaboration with Ian Gatley to explore the proper abstraction for a generalized service description logic for science education.

The Scheduler

- Semi-automated
  - Knows when to request human assistance.
  - Human can step in at any time.
- Pulls in data from diverse sources.
  - Weather forecaster; real time weather server; TOMS airborne particulate concentration; etc.