



ASTROPHYSICAL VIRTUAL OBSERVATORY

Science-driven VOTech Tools

or

What we cannot afford not to do

Paolo Padovani, ESO

VOSystems Dept & AVVO Science Manager

VOTech Project "Kick off" Meeting

Nov. 18 - 19, Cambridge

AVO Science Working Group Input

Data discovery and retrieval

- Show **all** available data for a source/position (or list of sources/positions) from **all** archives in given wavelength range or band
- Classify products: raw, calibrated, science-ready
- Allow retrieval and, if raw, access to data reduction tools
- Requires coordination with Data Center Alliance (DCA)
- Needs working registry + smart portal

AVO Science Working Group Input (+SRM)

Multi- λ image tool

- Image alignment and registration, distortion correction
- Point Spread Function (PSF) matching for images taken in different bands with different instruments (and possibly varying across the image)
- Vital also for multi- λ cross-match

AVO Science Working Group Input (+SRM)

Spectral Energy Distribution builder

- Put together **all** available fluxes for a given source/position over the whole electromagnetic spectrum, not only from catalogues (a la' NED) but also from archival spectra and images
- Requires same astrometric frame, metadata and UCDs to convert to same units (and from magnitudes to fluxes)
- Needs to be able to run on a variety of images
- Upper limits also very useful
- Requires data discovery and multi- λ tool, and coordination with DCA
- VOSpec first step for spectral data

AVO Science Working Group Input (+SRM)

Best-fitting tool

- Given a set of models and some observational data, find best fit

AVO Science Working Group Input (+SRM)

Add time axis to VO

- Show all available data for a source/position (or list of sources/positions) from all archives in given wavelength range and **a fixed time interval**
- Build time-dependent SED
- Requires data discovery, multi- λ , and SED tools, and coordination with DCA

More Input

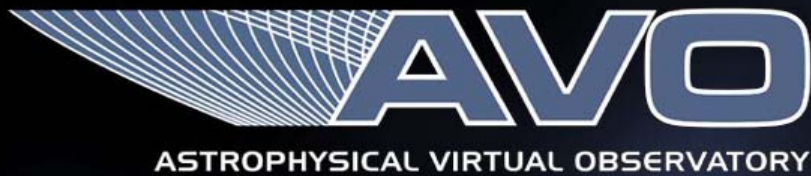
Complex, smart queries

- **Baseline**

- ✓ show all available data for all sources belonging to a given **class** from all archives in given wavelength range
- ✓ requires data discovery tool, coordination with DCA and data curators (SIMBAD, NED)

- **More complex**

- ✓ e.g.: “find all the quasars at redshift > 5 within an XMM image”
- ✓ and more ...



The AVO Science Reference Mission

- More input to come by end of Jan. 2005 ...