



SIXTH FRAMEWORK  
PROGRAMME

European Commission

Community Research



# Astrophysical Virtual Observatory

A virtual observatory (VO) is a collection of interoperating data archives and software tools which utilize GRID technologies to form a research environment in which complex research programs can be conducted. The Astrophysical Virtual Observatory project is a FP5 funded study for the design and implementation of a virtual observatory for European astronomy using the data archives of its six partners. The second phase of the project will be the subject of an FP6 IST Integrated Project proposal that will create an operational VO connecting all astronomical data centres in Europe with similar projects in the US and the Asian/Pacific region.

Astronomy, like many other physical sciences, has reached a crisis point in the execution of large national and international research programs. The "data explosion" from new ground and space observatories can no longer be readily processed, explored and exploited on the desktops of individual astronomers. Researchers must now turn to the GRID paradigm of distributed computing resources to solve complex, front-line research problems. A necessary step to achieve this new IT paradigm is to join the existing astronomical data centres and archives into an interoperating and federated unit. This new astronomical data resource will effectively form a Virtual Observatory (VO) in which the digital Universe resident in the archives can be seamlessly explored across the entire spectrum.



In much the same way as a real observatory consists of telescopes, each with a collection of unique astronomical instruments, a VO consists of a collection of data centres each with unique collections of astronomical data, software systems and processing capabilities.

The Astrophysical Virtual Observatory project (AVO) will conduct a research and demonstration programme on the scientific requirements and the technologies necessary to build a VO for European astronomy. The AVO has been jointly funded by the European Commission as an FP5 RTD project involving six European organisations for a three year, Phase-A work programme valued at 5 million Euro. The six partner organisations are ESO, ESA, the UK AstroGrid consortium, the Centre de Données Astronomiques de Strasbourg (CDS), the TERAPIX astronomical data centre at the Institut d'Astrophysique in Paris and the Jodrell Bank Observatory. The AVO project is currently working in coordination with other international VO efforts in the US and Asia-Pacific region as part of an International Virtual Observatory Alliance (IVOA) to define essential new data standards so that the VO concept can have a global dimension.



The AVO partners will join with all astronomical data centres in Europe to put forward an FP6 IST Integrated Project to make a European VO fully operational by the end of 2007.

## Our Mission

The OPTICON Infrastructure Coordination network brings together all of Western Europe's owners and operators of large observatories and data centres. Our goal is to identify opportunities where greater progress can be made by collaboration than by competition, and to take unified actions to achieve those agreed goals.

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