AVO Science Working Group – Terms of reference

Introduction.

The Astrophysical Virtual Observatory (AVO) is a three year Phase A Project that aims at the definition and pilot implementation of a research facility that federates in an innovative and optimal way the large amount of astronomical data and databases that are becoming accessible to the community. This three year Phase A program will also lay all the necessary groundwork for a Phase B implementation of a fully operational virtual observatory facility for Europe.

The Phase A program will have the following key objectives:

- To develop a detailed set of scientific requirements for the design, implementation and operation of an AVO following the GRID paradigm of distributed and scalable computational infrastructures
- To define appropriate standards and interfaces for the federation of astronomical data archives from space and ground facilities into a coherent data warehouse for the AVO
- To conduct a demonstration and feasibility program for archive interoperability by deploying emerging technology to a small number of currently operational, non-federated, archive centres from the proposal partners (e.g. VLT/HST archive, Terapix archive, Jodrell Bank archive) to form a multiwavelength research resource
- To assess, develop and deploy new scalable solutions for AVO storage and computational needs following, and in coordination with, GRID initiatives in other disciplines
- To assess, develop and deploy test systems for the astronomical utilization of GRID technologies in the area of remote resource utilization
- To facilitate the interaction and collaborative work of experts (astronomers, software and hardware engineers) to assess and deploy GRID technologies for European astronomy
- To initiate dialogue and research relationships with European industry in key AVO and GRID technology areas such as networking, database design and storage management
- To build collaborative links to similar efforts in the US, Canada and Australia with a view to the expansion of the virtual observatory facility on a global scale.

The Project is lead by ESO and has ESA, CDS Strasbourg, TERAPIX Paris, Jodrell Bank Observatory Manchester, AstroGrid UK as partners. AVO is co-financed by the European Commission. More details about the Project can be found on the web (http://www.eso.org/projects/avo/).

The AVO Project has been operationally divided into three main Work Areas: Science, Archives Interoperability, GRID and Data Storage Technology.

The AVO Science activity is to be supported by an AVO Science Working Group representing the international astronomical community.

The AVO Science Working Group – Terms of reference

1. The AVO SWG is composed of **principal members** and **members at large**. Principal members are invited to actively participate in the meetings of the SWG. The participation in the meetings is financially supported by the AVO Project. Members at large are those who responded positively to the invitation to participate in the AVO science activities, but could not be selected in order to keep the size of the SWG within financial and efficiency boundaries. Members at large will be kept informed about the work of the SWG and will be invited to provide comments and input by electronic means.

2. The AVO SWG is chaired by the AVO Science Area Coordinator.

3. The AVO SWG will advise the Project in the following areas:

    a. Definition of the AVO Science Reference Mission or, alternatively**,** the Science goals that the AVO Phase A has to achieve in order to be considered successful.

    b. Scientific quality of the archived data and quantitative methods to describe it in the different wavelength ranges. Minimum acceptable level of scientific quality for AVO data.

    c. Critical analysis of the scientific quality of the existing on-line archives. Suggestions for improvements.

    d. Scientific accountability of AVO and of the federated archives. Traceability and acknowledgement of scientific decisions within AVO.

    e. Data analysis methods and tools for the AVO data.

    f. Progress review of AVO

    g. Scientific requirements for the AVO Phase B (AVO full implementation). AVO Science Operation concepts.

4. The AVO will maintain web pages with the minutes and resolutions of the SWG. Work areas, restricted to the SWG members, will also be available, if needed.

5. The AVO SWG membership will last for the duration of the Phase A Project.