

IP2SF19 Appendix 1: The International Virtual Observatory Alliance

A Mission and Roadmap Statement 2002-2005

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On the behalf of the ASTROGRID, AVO and NVO Projects

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In the past twelve months, four major international projects have been funded to develop and realize the vision of using astronomical data repositories as virtual observatories. The total investment of funds in these projects is more than \$24 million (US) over the next three-five years. The scope of these efforts is not limited to national boundaries but rather extends over the range of space and ground facilities utilized by the international astronomical community. Each project seeks to empower astronomers as they face the challenges of doing data-intensive scientific research in the 21st century; challenges that are also to be met by our colleagues in many areas of the physical sciences. Each project also wishes to tap into the underutilized scientific potential of existing and future astronomical data repositories. The number of VO projects continues to increase as more and more communities of astronomers realize the challenge and opportunity before them. Each project shares common needs and seeks access to common ground. There is, therefore, a need to define this common ground and find ways of meeting the needs as an international astronomical community seeking to realize a VO with global capabilities.

If the international virtual observatory (IVO) is to become a reality we need to define its mission and the steps necessary to achieve it as a coordinated international effort. Each of the existing national and international efforts will have its own particular set of science drivers, technology interests and metrics for success. While this diversity is beneficial to the success of an IVO, there are also elements of the international effort that must be common and agreed upon if the IVO is to become an operational reality. Most of these common elements have to do with standards for data and interfaces. Other common or shared elements may be in the form of software packages, source code libraries, and development tools. Some others have to do with issues of policy, funding and securing international support at governmental levels. We have already agreed that interoperability standards of various kinds have to come early on the road to the IVO. We also believe that early demonstrations of new capabilities at various levels of complexity are essential if the VO effort is to gain credibility in the broader astronomical community. And we must enable the open exchange of information and share experiences among the various VO projects. We therefore need to create a publicly visible roadmap for the IVO. Some of the milestones on this map have already been achieved and others must be met in the very near term.

We need a mechanism to facilitate international coordination and to achieve the vision laid out in this roadmap. We propose the formation of an International Virtual Observatory Alliance (IVOA) as a mechanism to gather other international programs into a coordinated effort. The alliance will consist of representatives from all funded international VO projects who meet on a

regular basis to refine the roadmap and reach consensus on choices for the “common ground” issues without which the IVO will not function.

The ASTROGRID, AVO, NVO, and CVO projects take the opportunity of the Munich VO meeting to formally announce the IVOA and would like to extend an invitation to all VO projects to join this alliance for the pursuit of an international virtual observatory and the expansion of astronomical research capabilities in the 21st century.

Signature : ASTROGRID

Signature : AVO

Signature : NVO

Signature: CVO

IVOA Mission and Roadmap 2002-2005

DRAFT

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Mission : To facilitate the international coordination and collaboration necessary for the development and deployment of all tools, systems and organizational structures necessary to enable the international utilization of astronomical archives as an integrated and interoperating virtual observatory.

Roadmap :

January 28-29, 2002 Initiate international dialog on metadata standards and interoperability. OPTICON Interoperability Working Group meeting, Strasbourg.

- Discussion and revision of draft VOTable standard

April 15, 2002 Reach agreement on VOTable 1.0.

June 10-14, 2002 Formation of IVOA

October 2002 *Astronomical Query Language – 1.0 definition*

January 2003 Coordinated initial science demonstrations by IVOA members

January 2003 IVOA agreement on initial suite of interoperability standards and tools

May 2003 First Web Services

August 2003 Coordinated intermediate science demonstrations that include international data access and exchange at IAU General Assembly

October 2003 First compound Web Services and Ontology Service

January 2004 Coordinated intermediate science demonstrations, including incorporation of grid-based computing and data storage technologies

May 2004 Resource Discovery 1.0

July 2004

VO – development roadmap for 2005+

January 2005

Coordinated complex science demonstrations