



# IVOA and European VO Efforts Status and Plans

Fabio Pasian

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# The IVOA: <http://ivoa.net>

- **Mission:** “To facilitate the *international coordination and collaboration* necessary for the development and deployment of the tools, systems and organizational structures necessary to enable the international utilization of astronomical archives as an integrated and interoperating virtual observatory”
- Works by telecons, “TWiki” pages, and bi-annual meetings (last one in Victoria [May 2010], next in Nara [December 2010])
- **Needs:** standardization of data/metadata/sw, data **interoperability methods**, and list of available **services (provided by projects)**
- **Slow convergence on standards and take-up**
- Structure:
  - ✓ IVOA Executive Board includes representatives from all VObs projects
  - ✓ Rotating Chair (Paolo Padovani, Ajit Kembhavi)
  - ✓ Working and Interest Groups



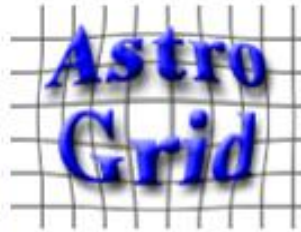
# The IVOA: <http://ivoa.net>

- Organization: working groups to tackle various aspects
  - ✓ Applications (VObs software)
  - ✓ Data Access Layer (VObs standards for remote data access)
  - ✓ Data Modelling (data characterization)
  - ✓ Data Curation and Preservation (long-term preservation of data)
  - ✓ Grid and Web Services
  - ✓ Resource Registry (VObs resources: “yellow pages”)
  - ✓ Semantics (meaning/interpretation of words, sentences, etc. in astronomy)
  - ✓ VOEvent (definition of immediate event [e.g., GRB])
  - ✓ VObs Query Language (to be used by applications)
  - ✓ VOTable (XML format for VObs data exchange)
- plus Theory and Data Mining Interest Groups
- plus Standing Committees: Standards and Procedures, Science Priorities



# IVOA goals

- An alliance of projects to:
  1. Develop interoperability standards
  2. Enhance communication
  3. Foster collaboration
  4. Cultivate VO awareness and usage by the astronomical community
  5. Coordinate (+ prioritise and validate) the implementation of standards, tools and services (see talk by Dave De Young)





# Ever-changing funding scenario

| <u>Project</u> | <u>Trend</u> | <u>Project</u> | <u>Trend</u> |
|----------------|--------------|----------------|--------------|
| ArVO           | ▶            | France-VO      | ▶            |
| AstroGrid      | ▼            | GAVO           | ▶            |
| BRAVO          | ▲            | JVO            | ▼            |
| CVO            | ▲            | NVO → VAO      | ▲            |
| China VO       | ▲            | RVO            | ▶            |
| ESA            | ▼            | SVO            | ▲            |
| ESO            | ▼            | VObs.it        | ▼            |
| Euro-VO        | ▼            | VO-India       | ▲            |

Trend = status 2010 vs status 2007



# IVOA sustainability

- Need to guarantee a “robust and enduring path to ensure that science driven developments will continue” → sustainability
- IVOA has no funds of its own
  - sustainability can be achieved only through and within national projects
- National ~~projects~~ → collaborations
  - buffering effect
  - permanent staff to guarantee continuity



# IVOA priorities

- IVOA has no funds of its own
  - nobody can force projects to follow IVOA priorities
- **Need to keep a balance between IVOA priorities and national collaborations' needs**
  - no “Deus-ex-machina” solution
  - this should be solved by the representatives of the national collaborations **within Exec** (consensus)
- **The success of any individual national VO relies on the success of the whole IVOA**





RVO

Astro  
Grid

Aus-VO

VObs.it

China-VO

VO-i

CVO

BRAVO

NVO  
NATIONAL VIRTUAL OBSERVATORY

IVOA

SVO  
Spanish Virtual Observatory

ArVO  
Argentinian Virtual Observatory

EUROVO



JVO

ESVO

HVO  
Hungarian Virtual Observatory

GERMAN ASTROPHYSICAL  
GAVO  
VIRTUAL OBSERVATORY

France  
VO

eesa  
VO  
Virtual Observatory

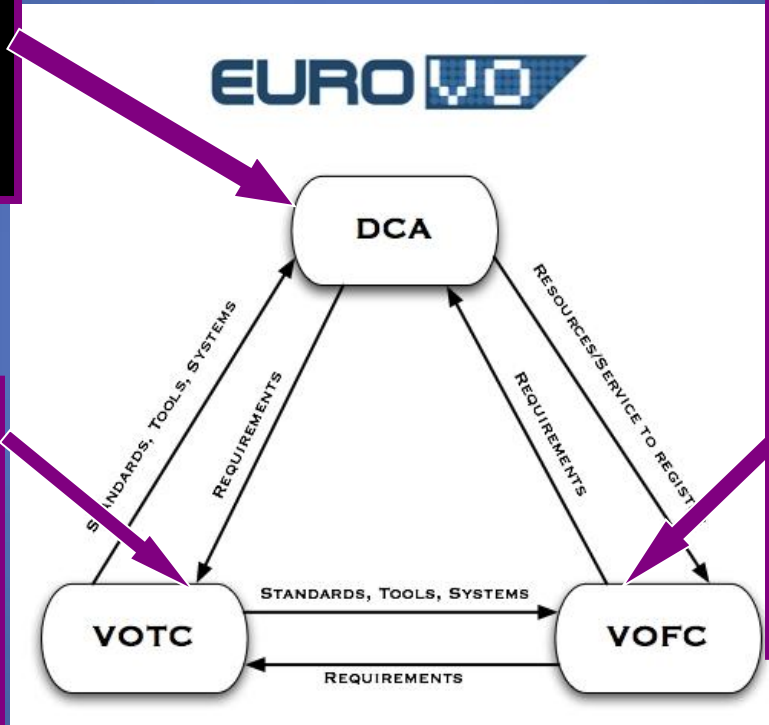


## EURO-VO <http://www.euro-vo.org>

- Successor to the Astrophysical Virtual Observatory (**AVO**), which was a 5 M€, Phase A study (2001 - 2004/5) on the scientific requirements and technology for building the VObs in Europe, 50% funded by European Community (Fifth Framework Programme [FP5])
- Includes 8 partners: **ESO**, European Space Agency (**ESA**), plus six national nodes: **INAF** (Italy), **INSU** (France), **INTA** (Spain), **NOVA** (Netherlands), **PPARC** (UK), and **MPG** (Germany)
- EuroVO SAC, Board – Chair: Françoise Genova
- Partly funded by the EC, but substantial (~ 50%) **partner support**
- Has three components: Data Centre Alliance, Technology Centre, Facility Centre

An alliance of European data centres who populate the EURO-VO with data, provide the physical storage and computational fabric and who publish data, metadata and services to the EURO-VO using VObs technologies

A distributed organization that coordinates a set of research and development projects on the advancement of VObs technology, systems and tools in response to scientific and community requirements



An operational organization, that provides the EURO-VO with a persistent, centralized registry for resources, standards and certification mechanisms as well as community support for VObs technology take-up and scientific programs. EURO-VO's "public face". Should also deal with outreach and education.



# EURO-VO (I)

- Data Centre Alliance co-funded by the EC (**EuroVO-DCA**) at 1.5 M€ level (FP6) for 2.5 yrs since Sept. 2006; *8.5 FTE/yr*. Lead by CDS, Strasbourg, France.
  - Workshops for astronomers and for developers ; coordination
- Technical Centre co-funded by the EC (**VO-TECH**) at the 3.3 M€ level (FP6) for 4.5 years since Jan. 2005; *21 FTE/yr*. Lead by AstroGrid, UK.
  - “Design Studies”, meetings every 6 months
- Facility Centre (FC), located at ESO, co-managed by ESO & ESA; support at “best-effort” level [*~ 2 FTE/yr*]
  - Workshops, Web pages, Research Initiative
  - Selection of EURO-VO Science Advisory Committee



# EURO-VO (II)



- The EURO-VO proposal “Astronomical Infrastructure for Data Access (**EuroVO-AIDA**)” funded within the EC first Framework Programme 7 (FP7) Infrastructure call INFRA-2007-1.2.1 “Scientific Digital Repositories” with 2.7 M€; same partners as the EURO-VO. Started Feb 2008.
- Ensures continuation of European-wide **VObs activities until 2010**
- AIDA is a **combination** of DCA, VOTECH, and FC activities
- AIDA is
  - unifying the digital data collection of European astronomy
  - integrating their access mechanisms with evolving e-technologies
  - enhancing the science extracted from these data-sets
  - supporting the worldwide VO shift from development to operations



# AIDA take-up activities

- ▶ D4.1 (June 2008): First Announcement of Opportunity [May 2008]
- ▶ D4.2 (April 2009): First release of on-line science-oriented tutorials (<http://www.euro-vo.org/pub/fc/workflows>) [April 2009]
- ▶ D4.3 (June 2009): Second Announcement of Opportunity [May 2009]
- ▶ *D4.4 (April 2010): Final release of on-line science-oriented tutorials*
- ▶ Plus work for:
- ▶ D2.2 (October 2008): First “Community Feedback” Workshop, ESAC, [December 2008]
- ▶ D2.3 (February 2009): “Hands-on” Workshop, ESO [March 2009]
- ▶ D2.8 (October 2009): “Community Feedback” Workshop, Strasbourg [January 2010]



# AIDA VO Days

➔ Repeated at the national level by some Euro-VO partners

➔ In last 9 months:

- ESO “VO Day” [September 2009]
- SVO Granada “Hands-on” School [October 2009]
- Geneva “VO Day” [January 2010]
- SVO Tenerife “Hands-on” School [March 2010]
- VO ...in Tour [Italian initiative, December 2009 – April 2010]
- Bonn “VO Day” [April 2010]
- Dutch “VO Day” [April 2010]
- SVO Madrid “Hands-on” [May 2010]
- French “VO School” [June 2010]
- Swedish “VO Days” [June 2010]
- Typically 1 to 2 day events, with 15 - 30 participants



# An example: VO-days in Tour

- 12 sites visited (+ videocon with TNG La Palma)
- 272 registered (> ¼ of INAF research staff !), 244 attended, 176 filled the Evaluation Form
- About 70% had heard about VO and its tools
- **Success!**
  - Requests for more specific tutorials on tools and how to publish own data in VO
  - Plan to have a wrap up, with participants bringing own scientific case







# An example: VO-days in Tour

## 4 use cases:

Use Case 1: Confirmation of a Supernova candidate

Use Case 2: Searching for data available for M51

Use Case 3: Photometric redshifts with DaME

Use Case 4: Data extraction from multidimensional dataset

|        | no | poor | enough | interest | v.interest | % good |
|--------|----|------|--------|----------|------------|--------|
| Case 1 |    | 1    | 17     | 81       | 62         | 89 %   |
| Case 2 |    | 3    | 18     | 78       | 72         | 88 %   |
| Case 3 | 1  | 4    | 21     | 60       | 77         | 84 %   |
| Case 4 | 3  | 5    | 19     | 56       | 71         | 82 %   |



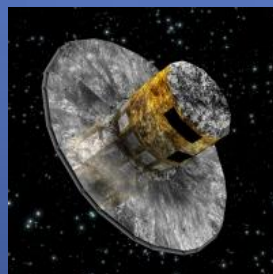
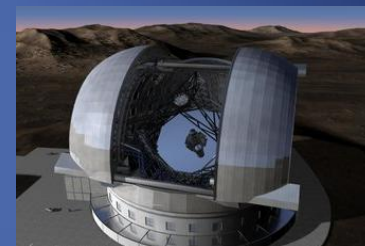
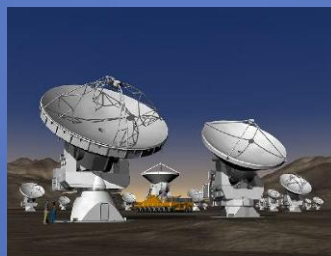
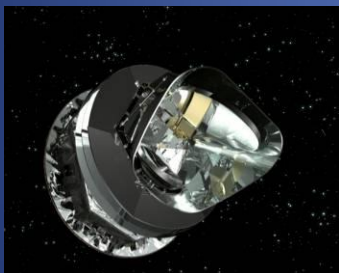


# EURO-VO (III)

- **Astronet initiative preparing a governance model for EuroVO**
- **EuroVO-ICE** (“International Cooperation Empowerment”) approved within the EC last Framework Programme 7 (FP7) e-infrastructures call as a Coordination Action – to start in late 2010 – limited funding aimed at meetings/workshops
- **EuroVO-ICE** as bridging project towards an initiative aiming at
  - Targets: Sun and heliosphere, planets, all objects beyond the solar system – stars, galaxies, interstellar clouds, etc
  - Assess commonalities to
    - Re-use and evolve interoperability standards
    - Build semantic bridges ; customise tools?
  - Build a common framework



# Under a common framework?





Thank you  
for your attention

