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EuroVO-DCA

The European Virtual Observatory Data Centre Alliance

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RESEARCH INFRASTRUCTURE

COMMUNICATION NETWORK DEVELOPMENT

D9 – IMPLEMENTATION FEEDBACK REPORT

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RE	Restricted to a group specified by the consortium (including the Commission Services)	
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1. WP3-2 OBJECTIVES AND STARTING POINT OF WORK AT THE BEGINNING OF THE PROJECT

WP3-2 gathered technical and related feedback on the VObs framework, including relevant tools for data publishing and data access and manipulation using established and evolving IVOA standards. Progress towards full implementation of these standards by European data centres was monitored across a range of missions and data types. WP3-2 was therefore an important sub package in providing wider support to the take-up and implementation of the VObs framework (WP3) and provided valuable input for planning of WP3 workshops and related activities for the duration of the project.

WP3-2 leads prepared detailed questionnaires at the data publishing workshops in order to assimilate feedback from data centres in the context of VO deployment of datasets. Key implementers were targeted such as developers using VO infrastructure elements, e.g. VO tool builders, as well as general users at VO workshops and demonstrations. The targets for output of this feedback include infrastructure developers, IVOA standards developers and other relevant software engineering staff within the VO-TECH project, other European VO technology groups and IVOA interoperability working groups.

In order to meet the key requirements of a formal and properly supported feedback and reporting mechanism, we trialled the use of web-based reporting alongside outreach activities. In addition to the two main data publishing workshops and requirements gathering activities (WP3) we were also able to incorporate additional feedback from the theory (WP4) and computational grid (WP5) workshops in April 2008. We successfully built upon the previous knowledge and experience gained among European VO partners in running extensive scientific and technical workshops during the initial years of VO development.

Throughout Cycle 2, WP3-2 leads continued to assimilate feedback from data centres in the context of VObs deployment of datasets and then gathered further technical feedback at the 2nd "EURO-VO Workshop on how to publish data in the VO", again using a feedback questionnaire. There follows more detailed feedback from the two major workshops on publishing data with emphasis on technical feedback in the VObs context.

2. PROGRESS TOWARDS OBJECTIVES

An overview of the organisation of the workshops is provided by WP3 (D8). In sections 2.1 and 2.2 we concentrate on feedback from the data publishing workshops and implementation of VO standards from a technical viewpoint but in the context of the varied projects and data centres involved.

2.1. Feedback from the first Euro-VO Workshop on "how to publish data in the VO", June 2007, ESAC

There was a specific feedback session at the end of the Workshop for advisors and participants to give their feedback on the sessions and on the VObs protocols. Details of such feedback can be found on the Workshop web page at: <http://esavo.esac.esa.int/EuroVOWorkshopJune2007/SpeakersMonday.html>

A specific individual questionnaire was also given to the participants about the Workshop and the VObs protocols. In addition detailed one-to-one feedback was obtained and recorded where possible during the Workshop itself. In the event just fewer than 50% of the participants (advisors not included) responded to the post Workshop online questionnaire in detail and hence we were able to determine an accurate picture as follows. We were pleased to report that the Workshop was considered to be very successful and the feedback formed an excellent basis for planning of the second Euro-VO workshop in 2008 (section 2.2).

Participants came from a variety of different backgrounds including astronomers wishing to publish their own data, technical project team members with significant astronomical experience, software engineers and system administrators. Most knew very little about the VObs generally and therefore an adequate overview of the concepts, mechanisms, tools and standards was universally appreciated. Following this with hands-on sessions using the tools available was deemed to be essential. It is clear from the feedback responses that even a technically focussed Workshop such as this will draw users with a very wide range of interests and requirements. Hence at this stage in the evolution of the VObs, workshops such as this will always need to include full introductory technical and science background components.

Given the wide diversity in backgrounds of participants, the elements deemed most successful were also diverse. Overall, the format of starting with an overview and moving on to being able to try out a range of different VObs publishing tools proved very popular. This enabled participants to identify tools suited to their individual requirements. It was also useful to work directly with those already engaged with VObs data publishing and development and see real working examples as well as identifying the relevant IVOA working groups and standards. Unsurprisingly, catalogue publishing tools were the most popular in terms of number of attendees needing to use them but all sessions were well attended, including even the newest areas of spectra and transient events.

It was clear that for future Workshops we had to ensure we included aspects of database installation, data ingestion and management, at least as an optional element, while recognising that this is not formally part of the deployment of the VObs layer for a given service. In particular, for the significant number of participants wanting to publish smaller, science themed holdings (perhaps connected directly to a published catalogue associated with individual refereed journal papers), then additional knowledge was usually required in this area. Data publishing tools should also not be limited to a particular operating system where possible. A common request made afterwards was to set up a list of Euro-VO contacts in both the science and technical areas to include e.g. name, institute, theme, tools and so on. This ongoing process is being addressed using

the EuroVO webpages. It was necessary to emphasise to data centres that they did not need to rebuild databases from scratch but could publish to the VO in parallel to their existing data provision routes, e.g. local webpages, and thus build up services incrementally. In future it was seen as desirable to build upon the experience gained to provide end-to-end publish-to-science examples using the contacts gained through the IST and workshop participants.

In terms of achievement at the Workshop, 15% already published data to the VObs and said the Workshop helped them improve this while 50% stated they were going to start publishing data to the VObs within a year following the Workshop. 20% said they needed to know about VObs data access for some other reason. Impressively, no participants who responded thought they could not use the VObs to publish their data and all learned from the Workshop and noted the excellent support from the advisors. No participant felt the Workshop was inappropriate or not useful to them.

Feedback questionnaire - Workshop on how to publi... <http://www.insitefulsurveys.com/Survey.asp?SI=34...>

[Quit Survey](#)

Feedback questionnaire - Workshop on how to publish data in the Virtual Observatory (VO) - 2007

Dear colleagues,

Please help us to improve the DCA by giving your opinion on how useful you find VO standards and support for data access and what should be improved.

We hope that everyone taking part in this workshop (including advisors/speakers) will answer the questions below - feel free to add comments on any issue.

This questionnaire is available in 3 guises,

- Paper copy
- Email (just type and reply to eurovo_workshop_POC_2007@sciops.esa.int)
- On the internet at <http://www.insitefulsurveys.com/Survey.asp?SI=342655312661> (web form)

Please return this before you leave ESAC if possible; if not, by end of June at the latest.

1. Personal information (optional)

First Name:
Last Name:
Institute:
Email address:

2. Overview - What did you find most useful, and why?

3. Overview - What did you find least useful, and why?

4. General organisation - On average, were the sessions (tick one) :

- at the right level and pace
- too complicated and fast
- too basic and slow
- Other (Please Specify)

5. Achievement - Please select which statements apply, and/or add a comment

- I already publish data to the VO, the workshop helped me improve this
- I am going to start publishing data to the VO this year
- I need to know about VO data access for some other reason (please summarise in the comment box below: did the workshop help?)

Feedback questionnaire - Workshop on how to publis... <http://www.insitefulsurveys.com/Survey.asp?SI=34...>

- I don't think that I can use the VO for my data
- I already use the VO but I didn't learn much this week
- Other (Please Specify):

6. Comments (optional):

If you are responsible for an archive or data collection, you will have a chance to give more details in the DCA Census in July, see :<http://www.euro-vo.org/pub/dca/overview.html>.

In the following questions, please score each of the sessions you attended:

- 5 = Very useful, giving me something I can apply
- 4 = Fairly useful, will probably be of practical value
- 3 = Interesting but of no immediate use in my work
- 2 = Disappointing, not very useful
- 1 = Not what I was expecting

Please add any comments you have (use a separate piece of paper if you want, saying which day and session you are referring to).

7. Tuesday

	5	4	3	2	1
Catalogues: DSA	<input type="radio"/>				
Images: MEX	<input type="radio"/>				
Spectra: DALToolKit	<input type="radio"/>				

8. Comments:

9. Wednesday

	5	4	3	2	1
Catalogues: SAADA	<input type="radio"/>				
Images: DALToolKit	<input type="radio"/>				
Transient: VOEvent	<input type="radio"/>				

10. Comments:

11. Thursday

Feedback questionnaire - Workshop on how to publis... <http://www.insitefulsurveys.com/Survey.asp?SI=34...>

	5	4	3	2	1
Catalogues:	<input type="radio"/>				
DMMapper	<input type="radio"/>				
Images: SAADA	<input type="radio"/>				
Spectra: Mex	<input type="radio"/>				

12. Comments:

In the following boxes, please provide any comments on protocols and other IVOA standards - e.g. SIAP - how easy are they to use to publish/retrieve your data, is there anything vital missing, etc?

13. Images:

14. Spectra:

15. Catalogues:

16. Time series and event data:

17. If you have any other comments, please tell us:

Thank you for the time you spent filling this questionnaire. This information will be useful for us.

[Complete](#)

2.2. Feedback from the second Euro-VO Workshop on "how to publish data in the VO", June 2008, ESO

2.2.1 Overview

At the 2nd major data publishing workshop, we made use of information gathered in the census of data centres (Deliverable D5 in its final version) in order to target the requirements of the larger data centres where possible and encourage their participation at the workshop alongside the smaller survey groups and projects who attended the first workshop in significant numbers and once again in 2008. Attention was given both before and during the workshop sessions to assist those smaller providers who needed help with ingestion of datasets to a suitable database prior to the main VO publication process and hence fewer problems were experienced in this particular area.

It was noticeable that more detailed technical feedback was being provided from data centres already engaged in VO activities, now that more of the basic IVOA standards were in Recommendation form. However, significant numbers of participants were still at an earlier stage of making their datasets VO compliant. At the June 2007 Workshop we identified a number of participants who could benefit from further assistance in order to finish a complete implementation to publish their datasets in the VObs. In 2008 we provided this extra assistance either in small groups or in specific one-on-one tutorials, subject to demand. Specific time slots were allocated during the workshop to enable this process. Support provided ranged from assisting less experienced participants with particular problems, to discussing advanced techniques with experts from major data centres. This also provided an opportunity for participants to network and to learn from each other. In this way we were able to provide more tightly focussed interaction between data providers and the relevant experts, enabling the development of more detailed strategies for the publication of specific archives and collections. Likewise, there followed more in-depth study of the application of IVOA standards, including additional discussion of possible enhancements to the usability of current IVOA standards. This process is being further facilitated, in partnership with members of the Internal Science Team, by the ongoing development of practical science use cases, as provided via the Euro-VO webpages. Such learning experiences can now be used as exemplars for future assistance to data centres and planning of future workshops in this area.

A feedback survey was conducted online at: <http://www.insitefulsurveys.com/Survey.asp?SI=968831113304>. Feedback was nearly all positive: the sessions were mostly rated between "Very useful" and "Fairly useful". A small number of participants described some sessions as "Interesting but of no immediate use". People valued the interaction with peers and experts as well as the formal sessions; the short and focused "one-on-one" sessions were very well received. Participants valued especially being able to publish their own data since this gave them more confidence that the workshop would be of ongoing use when they went home.

2.2.2 Projects

In terms of participating projects, 3 mentioned nascent or recent VO's, in Chile, Turkey and Armenia. Pleasingly, many major facilities and missions were represented and covered almost all wavelengths from high-energy facilities such as HESS, XMM-Newton and SWIFT, through to optical/IR observatories and massive surveys e.g. GAIA and submm and radio facilities including ALMA and VLBI. Similarly, science foci covered a wide range, from geodetic and planetary archives to the Planck Cosmic Microwave Background satellite. Large collaborations were also represented e.g. WINGS-Nearby Galaxy Cluster Survey and the Digitized First Byurakan Optical Survey. A number of participants also wanted to offer source lists, on-demand products and/or a variety of coordinated products e.g. images and spectra.

The breakdown of data centre projects represented is provided in the accompanying WP3 report (D8). In addition to the larger data centres, both large and small collaborations and survey projects were represented and typically mentioned provision of heterogeneous data products, e.g. images & spectra or visibility data & images. The list of these small but significant projects included:

- WINGS-Nearby Galaxy Cluster Survey
- XMM-Newton Medium flux serendipitous X-ray Survey (XMS)
- Digitized First Byurakan Survey (optical imaging)
- International Radio Very Long Baseline Interferometry Service for Geodesy and Astrometry
- Large galaxy survey, including imaging and spectroscopic data from a variety of sources

We were able to cater successfully for the needs of a very diverse range of projects and datasets, alongside fulfilling the requirements of the larger data centres. This demonstrates that the VO framework is maturing and that the standards are becoming more widely applicable to the European astronomical community.

2.2.3 Workshop organisation

The organisational and technical comments on workshop organisation were nearly all positive although inevitably one or two individuals thought that the time allocated for software installation was too long, or were held back by operating system issues or similar on their own machines. There was more general unease if it was perceived that more than one database was required, and at any conflict between different Java versions used in these cases. People valued the interaction with peers and experts in one-to-one sessions as well as the formal sessions. It is encouraging that typical problems experienced were often at the level of operating systems or networks rather than with the VOs and IVOA standard framework itself and so could often be overcome after discussion with a more experienced tutor or by reference to online tutorial help provided.

Typical feedback on general organisation included: "The hands-on way permits a real practical experience that ensures deep comprehension of topics" although there was one complaint about: "Tutorials where one ends up following some instructions without exactly understanding". Participants especially valued being able to publish their own datasets (either remotely or on their own machines) since this gave them more confidence that the workshop experience would be of ongoing use back at their home institutes.

2.2.4 VO standards and implementation

A notable success of the second workshop was the popularity of metadata extraction tools provided by the different partners, including CDS, ESO and ESA. In particular, the session organised by CDS for assigning metadata was welcomed as a significant step forward, even by those projects already engaged in VO publishing. A typical experience might be to publish a catalogue to the VO, using e.g. the AstroGrid DSA tool, and then annotate metadata using the tools described above. It was noted that the apparent variety of ways to do the same thing on the surface could be confusing at times to a newcomer. More detailed discussions as the sessions progressed usually resolved these confusions while acknowledging that in some areas, such as the newly emerging area of time domain publishing and spectra, IVOA standards are still evolving and less mature. It was stressed that the IVOA should strive to make updates as few and as definitively as possible, while making sure that enough of the community required them to justify them.

This and more technical details arising from the workshop have been provided to the relevant IVOA working groups at the biannual international interoperability meetings and through online IVOA discussion forums.

As noted earlier, the apparent variety of ways to publish data can create some confusion while some participants requested things which are already possible (e.g. coordinated publication of images and spectra). While there is already a high level of cooperation between European national VOs it is emphasised that we should ensure that we avoid duplication and continue to coordinate or merge successful techniques.

A more general ability to handle non-equatorial coordinates - Galactic, ecliptic, Healpix etc, was requested and a more comprehensive standard for time-variable data. The latter is still a relatively new area in the VO context of course. Individual comments included "State of event data/lightcurve access specifications is a problem." But encouragingly it was then added "Will try to get time to be involved in developing the standard." This is being actively followed up with the relevant advisors after the workshop. Another said "We would like to be able to write metadata for regions of planetary bodies" and the need for the Table Access Protocol was also reinforced.

An overview of IVOA standards was provided during the introductory phase of the workshop but in feedback a few participants would have liked more detailed introductions to VO architecture and to how exactly a given component in each session fitted into this. These views were mostly expressed by those who already had significant exposure to implementing the VObs framework and developing standards. When planning the workshop, the Program Organising Committee decided to concentrate such further details where relevant within each parallel session. The alternative would have been to risk overloading the initial session with too much technical detail for newcomers. However, it was recognised that it is important to cover this important area, perhaps in a dedicated session, at future workshops. Given the overwhelmingly positive feedback from participants to the general organisation of the workshop we feel that, while it is difficult to find the perfect balance, the level at the beginning was judged to be about right.

2.2.5 Publication of Datasets

The full list of data publishing tools used at the workshop is given in WP3 (D8). We note that VO tools for accessing and manipulating the published datasets are of great benefit, both to the publishing data centres and in encouraging users to access datasets for science use. For example, the VOExplorer (AstroGrid) resource browser was often used by publishers during the workshop to validate and monitor a particular dataset on publication to the workshop test registry. It was then easier to make further modifications and improve the quality of associated metadata. Participants were then able to perform further tests and visualisation of their holdings by using the maturing set of VO tools now provided by the partners. Most popular in feedback were visualisation of catalogues and images using Aladin (CDS) and TOPCAT (VO-TECH) while spectra were examined using VOSpec (ESA) and SPLAT-VO (AstroGrid). In future, some participants would have liked a dedicated session on emerging methods of scripted VO data access, retrieval and manipulation.

It is less simple to answer the question of how anyone, anywhere can get access to any VO-published data. Although we successfully demonstrated publication of datasets provided by participants to a test workshop registry, global harvesting is still not always complete. This is because we are still in a transitional phase between the early IVOA registry standard and the recently agreed new v1.0 standard. A priority for the IVOA and participating members has to be to ensure major registries are fully interoperating and available to all. In the short term this means ensuring Registry v1.0 standard compliance as soon as possible.

Feedback questionnaire - Workshop on how to publish data in the Virtual Observatory (VO) - 2008



Feedback questionnaire - Workshop on how to publish data in the Virtual Observatory (VO) - 2008

Dear colleagues,

Please help us to improve the DCA by giving your opinion on how useful you find VO standards and support for data access and what should be improved.

We hope that everyone taking part in this workshop (including advisors/speakers) will answer the questions below - feel free to add comments on any issue.

This questionnaire is available on the internet at: <http://www.insitefulsurveys.com/Survey.asp?SI=968831113304> (web form)

Please return this before you leave ESO if possible; if not, by 18 July at the latest.

* Personal information (optional)

First Name: _____
Last Name: _____
Institute: _____
Email address: _____

* On which project(s) are you working?

* Overview - What did you find most useful, and why?

* Overview - What did you find least useful, and why?

* General organisation - On average, were the sessions (tick one) :

- at the right level and pace
- too complicated and fast
- too basic and slow
- Other (Please Specify)

* Achievement - Please select which statements apply, and/or add a comment

- I already publish data to the VO, the workshop helped me improve this
- I am going to start publishing data to the VO this year
- I need to know about VO data access for some other reason (please summarise in the comment box below: did the workshop help?)
- I don't think that I can use the VO for my data
- I already use the VO but I didn't learn much this week
- Other (Please Specify):

* Comments (optional):

Feedback questionnaire - Workshop on how to publish data in the Virtual Observatory (VO) - 2008

If you are responsible for an archive or data collection, please fill in the DCA census:
<http://cds.u-strasbg.fr/wiki/DCA/bin/view/EuroVODCA/DCACensusQuestionnaires>
 if you have not done this already.

In the following questions, please score each of the sessions you attended:

- 5 = Very useful, giving me something I can apply
- 4 = Fairly useful, will probably be of practical value
- 3 = Interesting but of no immediate use in my work
- 2 = Disappointing, not very useful
- 1 = Not what I was expecting

* Tuesday

5 4 3 2 1

Publishing catalogues with DSA
 Assigning metadata to your datasets

* Comments:

* Wednesday

5 4 3 2 1

Publishing data with Saada
 Publishing catalogues with DMMaper

* Comments:

* Thursday

5 4 3 2 1

Publishing time-based data
 Publishing data with MEx and DALToolKit
 Theoretical data

* Comments:

* Tuesday-Wednesday-Thursday

5 4 3 2 1

One-on-one sessions and talks

* Comments (please indicate what you worked on if relevant):

Feedback questionnaire - Workshop on how to publish data in the Virtual Observatory (VO) - 2008

In the following boxes, please provide any comments on protocols and other IVOA standards - e.g. SIAP - how easy are they to use to publish/retrieve your data, is there anything vital missing, etc?

" Images:

" Spectra:

" Catalogues:

" Time series and event data:

" Theoretical data:

" Are you interested in getting more information on the IVOA standards themselves?

Yes

No

Other (Please Specify)

" If you have any other comments, please tell us:

Thank you for the time you spent filling this questionnaire. This information will be useful for us.

2.3. Other Meetings related to WP3-2

In the frame of WP3-2, here is the list of meetings or events at which EuroVO-DCA members and participants attended:

- AstroGrid Science Workshop and RadioNet / AstroGrid workshop for radio data providers, Oxford, United Kingdom, 4th – 8th December 2006 (A.RICHARDS)
<http://wiki.astrogrid.org/bin/view/Astrogrid/AgRadionetWorkshopDec06>
 Note: This Workshop was primarily in support to the providers of radio astronomical data.
- Astronomical Spectroscopy and VO workshop, Villafranca 21st – 23rd March 2007 – EuroVO-DCA IST first face-to-face meeting, Villafranca 23/03/2007 (J.TEDDS, A.RICHARDS)
<http://esavo.esac.esa.int/SpectroscopyAndVOWorkshopMarch2007/>
 Note: This very successful Workshop was organized by WP3 as a meeting point between the scientific community and the VObs community. The Project Scientist organized an IST meeting at this occasion to optimize usage of travel funds.
- First Euro-VO “Workshop on how to publish data in the VO”, Madrid 25th – 29th June 2007 (J.TEDDS, A.RICHARDS, ALLAN, ANDREWS, HOLLIMAN, BENSON – advisors)
<http://esavo.esac.esa.int/EuroVOWorkshopJune2007/>
 Note: Major EuroVO-DCA delivery. Participants were a mixture of VObs developers and data centre staff interested in publishing data and services in the VObs. For instance for France: VObs experts were CDS engineers and scientists and data centre staff came from several French laboratories: Marseille-Provence Observatory, Grenoble Observatory, Paris Observatory.
- Joint European National Astronomy Meeting, Yerevan, Armenia, 23rd – 24th August 2007 (J.TEDDS)
<http://www.aras.am/JENAM-2007/EASsymp08.htm>
 Note: Demonstration of access to VO published datasets and science use in context of IVOA standards.
- Astronomical Data Analysis Software and Systems, London, 23rd – 26th September 2007 (J.TEDDS, A.RICHARDS)
<http://www.adass.org:8080/Conferences/2007/Venue/>
 Note: Demonstration of access to VO published datasets and science use in context of IVOA standards.
- VO Info Day, 24th – 25th January 2008, Sofia, Bulgaria (J.TEDDS)
<http://www.bgvo.org/VODAY2008/>
 Note: Demonstration of access to VO published datasets and science use in context of IVOA standards.
- IVOA Interoperability Meeting, Trieste, 19th – 23rd May 2008 (A.RICHARDS)
http://www.si.inaf.it/ivoa_interop_2008/
 Note: Feedback from data publishing workshops to IVOA standards process.
- Second Euro-VO “Workshop on how to publish data in the VO”, Garching bei München, 23rd – 27th June 2008
<http://www.euro-vo.org/dcaworkshop2008/>
 Note: Major EuroVO-DCA delivery. Participants were a mixture of VObs developers and data centre staff interested in publishing data and services in the VObs. Major facilities and missions represented covered almost all wavelengths from high-energy facilities such as HESS, XMM and SWIFT, massive surveys e.g. GAIA and international facilities such as ALMA, and radio including VLBI.

- Joint European National Astronomy Meeting (JENAM), Vienna, 8th – 12th September, 2008 (J.TEDDS)
<http://www.cosmic-matter.org/indico/conferenceDisplay.py?confId=6>
Note: Demonstration of access to VO published datasets and science use in context of IVOA standards.
- WP3-2 staff attended the EuroVO-AIDA Technology Forum, organized with VO-TECH on 29th September – 2nd October in Cambridge (J.TEDDS, A.RICHARDS)
<http://wiki.eurovotech.org/twiki/bin/view/VOTech/StageSevenPlanningMeetings>
and
<http://wiki.eurovotech.org/twiki/bin/view/VOTech/StageEightPlanningMeetings>

ACRONYM LIST

ALMA	Atacama Large Millimetre Array
ASDC	ASI Science Data Center
ASI	Agenzia Spaziale Italiana
AstroGrid	UK VO project
CDS	Centre de Données astronomiques de Strasbourg
CDPP	Centre de Données de la Physique des Plasmas
COROT	COncvection et ROtation stellaires et Transits planétaires
D#	Deliverable number
DAL	Data Access Layer
DCA	Data Centre Alliance
DSA	Data Set Access
ESAC	European Space Astronomy Centre, Villafranca del Castillo
EU	European Union
Euro-VO	European Virtual Observatory
EuroVO-DCA	Euro-VO Data Centre Alliance (EC Funded, eInfrastructure Communication Network Development)
EVN	European VLBI Network
GAIA	ESA mission, Global Space Astronomy for the 21 st century
GLAST	Gamma-ray Large Area Space Telescope, former name of the Fermi Gamma-ray Space Telescope
HESS	High Energy Stereoscopic System
INTEGRAL	International Gamma-Ray Astrophysics Laboratory
IVOA	International Virtual Observatory Alliance
JIVE	Joint Institute for Very Long Baseline Interferometry in Europe
LAMOST	Large Sky Area Multi-Object Fibre Spectroscopic Telescope
LEDAS	LEicester Database and Archive Service
LU	Leicester University
MEX	Metadata EXtraction
OMC	Optical Monitory Camera on INTEGRAL Satellite
POC	Program Organizing Committee
SAADA	Automatic Archival System for Astronomical Data
SAO RAS	Special Astrophysical Observatory of the Russian Academy of Sciences
SPASE	Special Astrophysical Observatory of the Russian Academy of Sciences
SWIFT	NASA Gamma-Ray Burst Satellite Mission
UK	United Kingdom
VLBI	Very Long Baseline Interferometry

VObs or VO	Virtual Observatory
VO-TECH	Virtual Observatory Technology (EC-funded project, Infrastructure Design Study, 2005-2008)
WINGS	Nearby Galaxy Cluster Survey
XMM	X-ray Multi-Mirror Mission
XMS	XMM – Newton Medium flux serendipitous X-ray Survey