Europlanet N4

Outreach Products integrated under Virtual Observatories and IDIS

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Virtual Observatories

European Virtual Observatory

The **EURO-VO** project is open to all European astronomical data centres.
Partners include ESO, the European Space Agency, and six national funding agencies, with their respective VO nodes: INAF, Italy; INSU, France; INTA, Spain; NOVA, Netherlands; PPARC, UK; RDS, Germany.

Data Centre Alliance
Alliance of European data centres
Physical storage
Publish data, metadata and services

Facility Centre
Centralised registry for resources, standards and certification mechanisms
Support for VO technology
Dissemination and scientific program

Technology Centre
research and development projects on the advancement of VO technology, systems and tools in response to scientific and community requirements

http://www.euro-vo.org/

Virtual Observatories

International Virtual Observatory Alliance

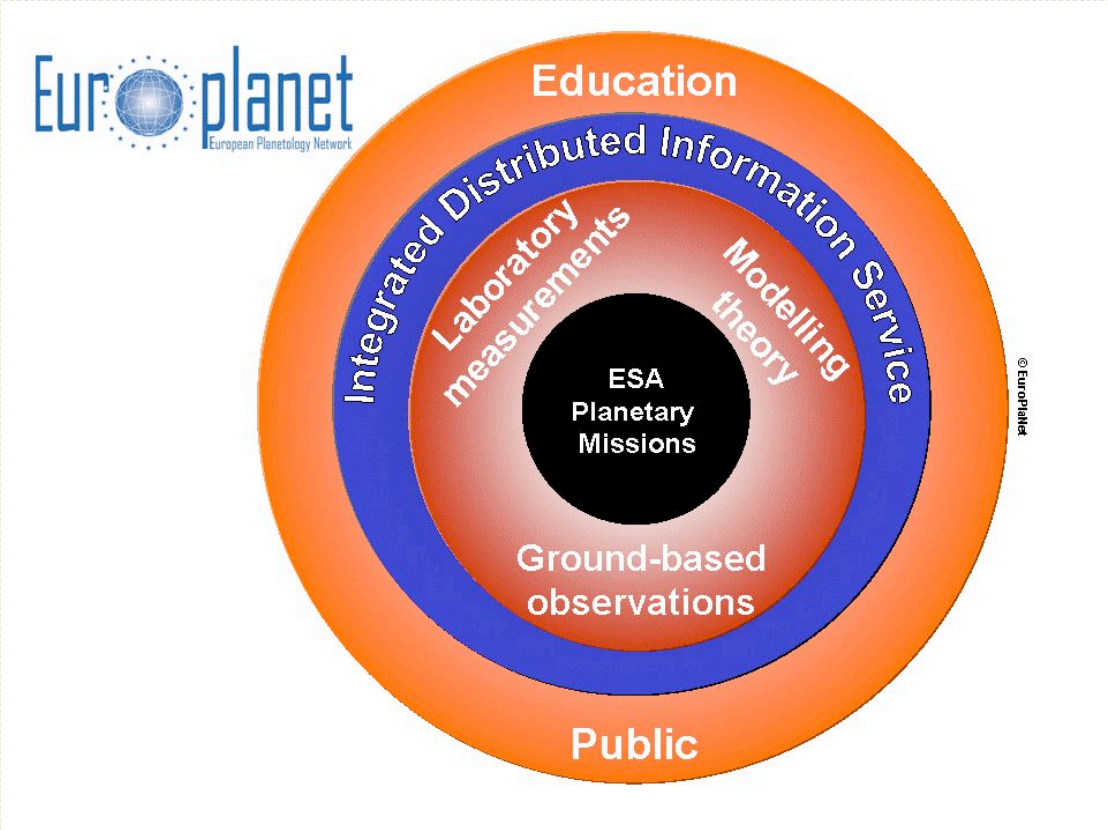
Facilitate the international coordination and collaboration necessary for the development and deployment of the tools, systems and organizational structures necessary to enable the international utilization of astronomical archives as an integrated and interoperating virtual observatory.

- Data Format Standards
- Metadata Standards

http://www.ivoa.net/

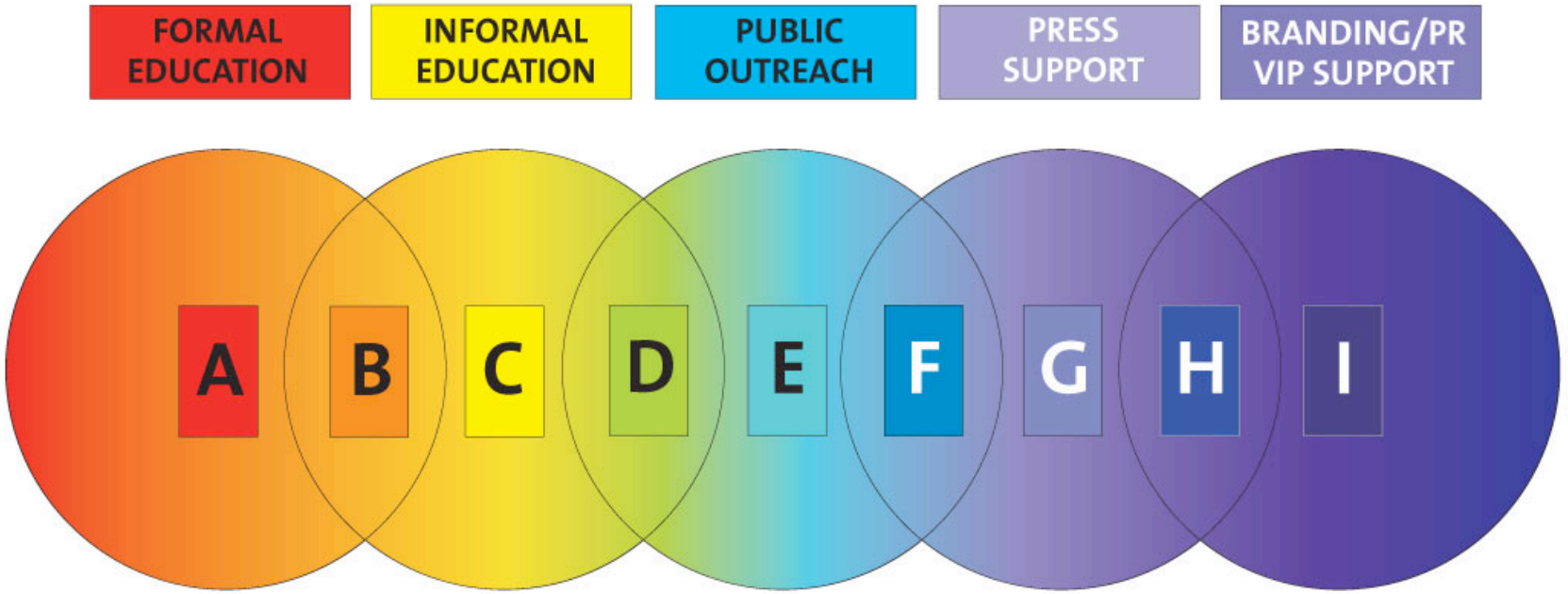
Virtual Observatories

IDIS Planetary Virtual Observatory



Integration under EURO-VO ?

Outreach Products



A: Curriculum-driven
- Textbooks
- Teacher training
- Undegrad. courses

B+C: Educational Prog.
- Planetaria
- Museums
- Libraries
- Exhibits

D: Public Outreach
- Planetarium Shows
- IMAX Movies
- Public Talks
- Hands-on demos

E+F+G: Media
- TV/Radio Documentaries
- Magazine Articles
- Press Releases
- Images
- Videos
- Press Conferences
- Web
- Podcasts
- Videocasts

H+I: Community + Branding
- Exhibition booths
- Technical brochures
- Technical reports
- Newsletters
- Merchandise

(Christensen 2006)

Astronomical Outreach Imagery (AOI) Metadata

- "Photographic" images produced from science data
- "Artwork" illustrations
- Videos
- Audio
- Digital Files
- Press Releases images and videos

Metadata standard (like XMP Format) will allow individual image files to be catalogued and offered through searchable databases like the Virtual Observatory or IDIS.

Embedded metadata are commonly in use in digital photography and the publication industry.

Astronomical Outreach Imagery Metadata Tags Standards for the VO endorsed by IAU last GA - 08/2006.

http://en.wikipedia.org/wiki/Extensible_Metadata_Platform

Astronomical Outreach Imagery (AOI) Metadata

Metadata keywords:

○ **FILE:**

1. Product type (“image”) [image/video/text]
2. File format (“tiff”) [tiff/jpeg/avi/mpeg-2/]
3. Original dimensions (=NAXIS1/2) (“2100 x 2304 pixels”)

○ **ID:**

4. Identifiers (e.g. “heic0412a, opo0420b”)
5. Observatory (“1: Hubble Space Telescope”)
6. Instrument (“WFPC2”)
7. Dataset names (VO compliant if possible): (“ivo://ESO.HST/U2JZ0607B, ivo://ESO.HST/ U2JZ0603B, ivo://ESO.HST/ U2JZ0605B, ivo://ESO.HST/U2JZ0601B”) [ivo://AuthorityID/ ResourceKey]
8. Data holding: ESO.HST
9. Creator (“41: Hubble European Space Agency Information Centre”)
10. Publisher (“Lars Lindberg Christensen”)

○ **PROCESSING:**

11. White level (z1)
12. Black level (z2)
13. Stretch function
14. Scale factor
15. Offset

○ **INFO:**

16. Quality (“2”)
17. Further information link (“http://hubblesite.org/newscenter/newsdesk/archive/releases/199 5/45/image/a”)
18. Comment
19. Credit (“ESA & NASA”)
20. Image release date (“02.01.1995”)

○ **ASTRO:**

21. Wavelength range (“502-658 nm”)

Virtual Repository

6 22. Corner coordinates (ra, dec, Epoch 2000) “(04 12 12, -05 04 32) (04 12 04, -05 04 32) (04 12 10, -05 07 32) (04 12 04, -05 07 32)”

23. Creation type (“real”) [real/simulated/artwork]
24. Target name (“M 42”)
25. Other Number of exposures (“4”)
26. Exposure times in seconds (“320, 300, 700, 900”)
27. Object class/subclass (“ Solar System”,○” Venus”)

(Hurt & Christensen 2006)

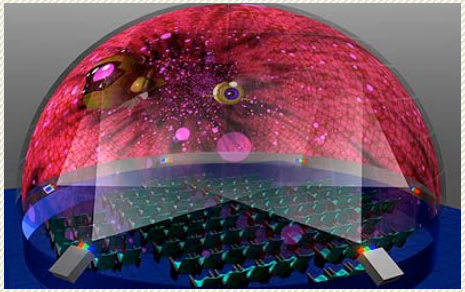
End-users

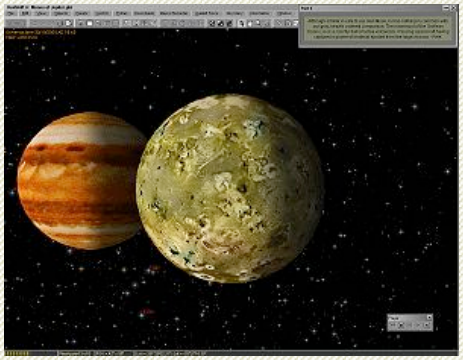
- Society
- Teachers
- Educators
- Media
- Pupils
- Fulldome - Planetaria
- Software companies

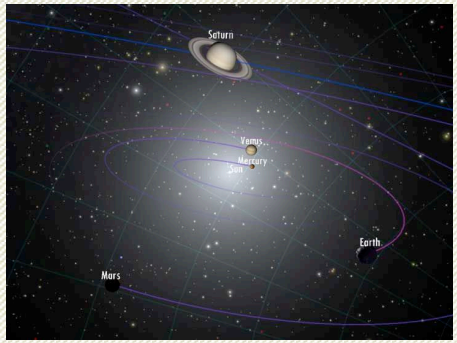
Redshift http://www.redshift.de/

Univew www.scalingtheuniverse.com/

- Google Solar System
- Google Universe



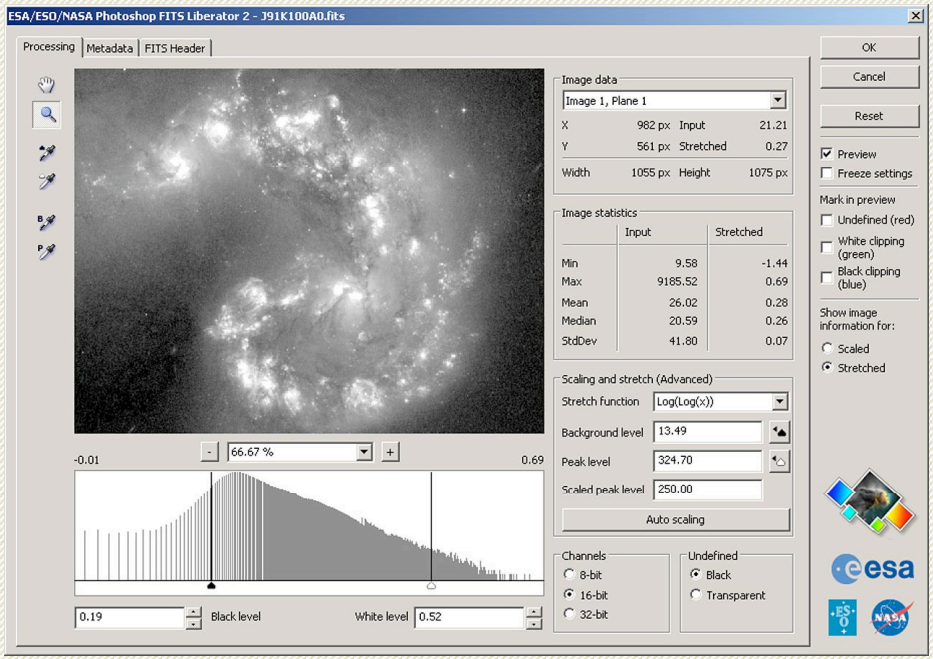




End-user Software

The ESA/ESO/NASA Photoshop FITS Liberator

" For many years astronomical images from the world's telescopes were reserved for an elite of astronomers and technical people. Now anyone with a desktop computer running of the self image processing software can try their hand at crafting astronomical images "



Users: Educators, Amateur Astronomers, Teachers, Pupils and Scientists. (FITS Liberator has more than 15 000 users)

FITS Liberator team is planning to include PDS in the next versions.

A Europlanet technical and scientific team should give support the FITS Liberator team.

FITS/PDS Liberator

http://www.spacetelescope.org/projects/fits_liberator/index.html

Recommendations / Suggestions

- IDIS integration under EURO-VO
- Astronomical Outreach Imagery Metadata Tags Standards for participating Institutes
- FITS/PDS Liberator