



ESO Phase 3: Submission for Ingestion and Publication of Data Products via the ESO Science Archive Facility

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- Phase 3 - definition and high-level goals
- Phase 3 for Public Surveys : data products types and delivery timeline
- Conclusions



Phase 3

- Phase 3 represents the final step in the execution of ESO Large Programs and Public Surveys; it closes the loop with the user community, and is a joint effort of the PIs/CoIs with ESO/EST/EDP.
- Phase 3 deliveries -
 - for Large Programs, these are the presentation web page and the data products which are consistent with Phase 1 specifications.
 - for Public Surveys, these are the survey data products and the QC report as stated and agreed upon in the Survey Management Plans. Timeline for delivery is described in the contracts signed by ESO DG and PIs.



Phase 3

External Data Product (EDP) group within the Data Product Department - members of EDP are: M. Arnaboldi (Head), Joerg Retzlaff, Remco Slijkhuis.

Phase 3 - The whole process to be carried out by the PI dealing with the publication of his/her data products in the ESO science archive facility (SAF). It consists of:

- Delivery of the data package(s)
- Their validation
 - Tool - Data formats
 - EDP - metadata, consistency of data products with Phase 1/ SMP
 - EST - guideline for the validation of the data products.
- The ingestion of the data products in the SAF.
- Publication and access of data products from the ESO SAF.

This requires a set of policies/guidelines and tools dealing with the above.



Phase 3 - ESO PS data products

As for the Phase 1 & 2, the PI is fully responsible for:

- 1) the preparation and delivery (technical) of the data products,
- 2) ensuring the scientific standard; and
- 3) the versioning of the data products from the public survey project.

The EDP group will support and guide the PIs to the successful completion of their program's Phase 3.

The EDP group is in charge of the collection of data products from the PIs, their validation and their ingestion into the ESO archive.

To this end a set of inter-operating software tools is being developed.



Phase 3 Tools for ESO Public Surveys

- Submission of data products to the ESO archive will be done via a Phase 3 infrastructure currently being developed by ESO.
- A “Phase 3” workshop for the Survey PI will be organised at ESO in the second half of 2010



Phase 3 Tools for ESO Public Surveys

- The structure and format of data products have to comply with ESO standards.
- The data standards applicable to ESO survey data products will be compiled and advertised by ESO/EDP in the first half of 2010.



Examples of guidelines for the submission of data products (images) resulting from ESO Large Programs

Image Guide — SAF - Science Archive Facility - Mozilla Firefox <2>

File Edit View History Bookmarks Tools Help

http://archive.eso.org/cms/eso-data/data-submission/image-guide

Science Archive Facility

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Raw Data Query Form
Reduced Data Query Form
Instrument Specific Query Forms
Observation Schedule
Ancient Conditions Database
User Publications
Data Direct Retrieval
Data Products
Data Products Submission Outlines
Hubble Space Telescope Data
Virtual Observatory Tools
Catalogues & DSS
Tools & Documentation
Related External Services
ESO & HST Image Outlines
ESO Archive News

EURO VO

VirGO

Guidelines for imaging data products

The table below contains the minimum set of information ('data items') requested for image headers (example header).

Providing these metadata in the FITS header and mapping it to the appropriate data items will enable users to fully characterise the data and to query for this information.

For each data item the table includes a description and a FITS header keyword suggestion. Keywords may assume different names as long as there is a one-to-one correspondence. The colour of each line indicates whether that item is: **required**, **highly recommended** or **optional**.

Data item	Description	FITS keyword
Duration		
Facility	The observatory or facility where the data was obtained	ORIGIN
Telescope	Telescope name. Please use the TELESCOPE key values from the raw frames (if present)	TELESCOP
Creator	Name of PI/Co-I	PI-COI
Collection	Proposal ID (identifier of the original proposal) or name of data collection	PROP_ID
Photometric calibration	(uncalibrated, relative, absolute)	FLUXCAL
Astrometric calibration	(uncalibrated, relative, absolute)	SPATCAL
Software reference	Description of software/pipeline used for processing (e.g. MVM, IRAF, etc.), with version	PROCSOFT
Bibliographic reference	Please use a format like 2006A&A...454.423V	BIBREF
Instrument		
Instrument name	Please use instrument values from the raw frames or as specified in the proposal	INSTRUME
Filter name	Please use the filter values from the raw frames or as specified in the proposal	FILTER
Instrument mode	Instrument mode (partly identifying optical path) as specified in the proposal ¹⁾	INS_MODE
Observation		
Effective exposure time	Effective exposure time (flux rescaled) [s]	EXPTIME
Total exposure time	Total exposure time [s]	TEXPTIME
Unit of pixel values	(ADU, ADUs)	BUNIT
Number of frames	Number of combined frames	NCOMBINE
Minimum flux	Min. physical value across image in BUNIT	DATAMIN
Maximum flux	Max. physical value across image in BUNIT	DATAMAX
Effective gain	Detector sensitivity in no. of electrons/count	GAIN
Comments	Further explanations about this data product	COMMENT
Target		
Target name	Target name	OBJECT
RA of the target	Right Ascension of target	RA_TARG
DEC of the target	Declination of target	DEC_TARG
Target position error	Positional uncertainty of target coordinates ["]	ERR_TARG
WCS		
NAXIS1	Number of bins along axis 1	NAXIS1
NAXIS2	Number of bins along axis 2	NAXIS2
CD1_1	Linear transformation matrix element 1,1	CD1_1
CD1_2	Linear transformation matrix element 1,2	CD1_2
CD2_1	Linear transformation matrix element 2,1	CD2_1
CD2_2	Linear transformation matrix element 2,2	CD2_2
CRPIX1	Pixel coordinate of reference point	CRPIX1
CRPIX2	Pixel coordinate of reference point	CRPIX2





ESO Public Surveys : data product types and delivery timelines



Summary table of deliverables at $t_0 + 6$ months and their frequency

Survey	Deliverable#1	Deliverable#2	Deliverable#3	Deliverable#4	When?	Frequency
	Tiles and confidence maps	Single band catalogues for each tile	Aperture Matched multi band catalogues	Source variability catalogues and light curves	1 st delivery: after 6 months	Every six months
ULTRAVISTA deep	Y, J, H, K _s , NB118	x	x		x	x
ULTRAVISTA ultra-deep	Y, J, H, K _s , NB118 (stripes)	x	x		x	x
VHS	Y, J, H, K _s	x	x		x	x
VIDEO	Z, Y, J, H, K _s	x	x		x	x
VVV	Z, Y, J, H, K _s	x	x ¹	x	x	x
VIKING	Z, Y, J, H, K _s	x	x		x	x
VMC	Z, Y, J, H, K _s	x	x ¹	x	x	x

¹: variable stars should be flagged in these catalogues

Calibrations: Deliverables #1, #2, and #3 have single-night based calibrations.





ESO PS data products delivery - cont.

Summary table of Advanced Data
Products survey releases at
 t_0+18 months and their frequency



Survey	ADP: Stacked tiles ²	ADP: Catalogues	ADP: Multi-epoch catalogues and light curves	When? T0+18 months	Frequency yearly	Survey final release (after 5 th year)
ULTRA-VISTA	Stacked image of all data up to that date (tile for deep part, and stripes for the ultra-deep one)	Aperture-matched multi-band catalogue from deep stack	no	x	x	yes
VHS ³	no	Source catalogue on the whole survey area available at the delivery date	no	x	x	yes
VIDEO	Stacked images of the fields up to the delivery date	Aperture-matched multi-band catalogue from deep stack of the fields	yes	x	x	yes
VVV	x	Source catalogue on the whole survey area available at the delivery date	yes Multi epoch catalogue in Ks band for the survey area available at delivery date	x	x	yes
VIKING ³	x	x	yes	x	x	yes
VMC	x	x	yes Multi epoch catalogue for the survey area available at delivery date	x	x	yes



Summary table of advanced data products - cont.

- 2: for the bands of the ADPs stacked tiles see Table 1.
 - 3: For VHS and VIKING, the Deliverable#1, i.e. the image tile, has already the depth and S/N targeted for that pointing position on the sky. The Survey release would then provide the revised astrometry and photometry globally calibrated. It may imply an update of the metadata associated with the deliverable#1, rather than a resubmission of the fits files for these tiles.
- Calibrations: delivered ADPs must have uniform photometric and astrometric calibrations that are checked globally.



ESO PS data products delivery - cont.

Important: timelines for deliveries of data products are agreed between the ESO DG and the survey PIs.

They are also associated with, and in preparation to, the survey progress reviews by the Public Survey Panel and the reports to the OPC.



Conclusions

The submission of data products from public surveys for publication from the ESO archive fulfills the requirements set by the ESO policies for public surveys.

- The benefits of the publication of data products and simple access by the community at large are numerous:
 - Enhance the legacy value of ESO data, facilitating further scientific exploitation
 - Uniform distribution of data products through the ESO Science Archive facility (search interfaces, complex queries etc.)
 - High visibility of data products and scientific results
 - Global broadcast to VO resource registries
- Contact usd-help@eso.org, subject: [EDP - ADP Submission](#) to get help for the submission of your data products!