Phase 3 - an introduction

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Outline

- The ESO Phase 3
  - Definitions
  - Policies & products
  - Timelines
  - Infrastructures and tools
  - The P3 workshop & who is who
  - Phase 3 - start of operations
Phase 3 - definitions

- Phase 3 represents the final step in the execution of ESO Large Programs and Public Surveys - both imaging and spectroscopy;

- Phase 3 closes the loop with the community, and is a joint effort of the PIs/Co-Is and ESO;

- During the Phase 3, a PI of an ESO large program or public survey
  - prepares and validates the data products according to specified standards,
  - organises and submits the data products via dedicated interfaces for their ingestion into - and publication through - the ESO archive.
Phase 3 - Policies

- The ESO/ST-ECF Science Archive Facility (SAF) is the collection point for the survey products and the primary point of publication/availability of these products to the ESO community. [ESO Council document on the VLT/VLTI science operation policies (Meeting #104, Dec. 17/18, 2004)]
- ESO assists the PIs to define and package their data products in a manner consistent with SAF and Virtual Observatory standards and integrates the products into the SAF.
- The allocation of observing time for the scientific follow up of the surveys will be subject to the timely delivery of the surveys’ products and their compliance to the specifications. The Public Survey Panel will periodically review the progress of the surveys and will assess the compliance to the specification of the surveys’ products.
Phase 3 - Policies

The delivery of the data products to the ESO archive from an ESO public survey is the PI’s responsibility; the PI certifies the scientific quality and accuracy of the data products, and *can delegate the data submission.*

Phase 3 for ESO Public Surveys:

- **When?** The timeline for data products delivery is described in the contracts signed by ESO DG and PIs. Deadlines are associated with, and in preparation to, the survey progress reviews by the Public Survey Panel and the reports to the OPC.

- **What?** Survey data products and the QC reports described and agreed upon in the SMPs.
Phase 3 – Data product types

The PS data products:

1. Astrometrically and photometrically calibrated, co-added, re-gridded images, along with their respective weight maps, in all the project-relevant filters.

2. Aperture-matched source catalogues based on individual or co-added bands. Associated source catalogues linking the parameters of individual objects across all of the observed filter bands.

3. Light curves for multi-epoch observations of variable sources.

The structure and format of data products must comply with ESO standards.
Phase 3 – Data products & timeline

The tables hereafter list short descriptions of deliverables and external data products, their initial deadline for submission and the frequency of the expected new releases.

In what follows, $t_0$ refers to the date of the official start of science operations for surveys with VISTA. According to the current schedule, it is April 1$^{st}$, 2010.
### Phase 3 – timeline #1

Table 1: Summary table of the deliverables at $t_0 + 12$ months, and the frequency of new releases

<table>
<thead>
<tr>
<th>Survey</th>
<th>Deliverable#1</th>
<th>Deliverable#2</th>
<th>Deliverable#3</th>
<th>Deliverable#4</th>
<th>When?</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>ULTRAVISTA deep</td>
<td>Tiles and confidence maps</td>
<td>Single band catalogues for each tile</td>
<td>Aperture Matched multi band catalogues</td>
<td>Source variability catalogues and light curves</td>
<td>1st delivery: April 1st 2011</td>
<td>Every six months</td>
</tr>
<tr>
<td>ULTRAVISTA ultra-deep</td>
<td>Y, J, H, Ks , NB118</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>VHS</td>
<td>Y, J, H , Ks</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>VIDEO</td>
<td>Z, Y, J, H, Ks</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>VVV</td>
<td>Z, Y, J, H, Ks</td>
<td>x</td>
<td>x¹</td>
<td>X</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>VIKING</td>
<td>Z, Y, J, H, Ks</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>VMC</td>
<td>Y, J, Ks</td>
<td>x</td>
<td>x¹</td>
<td>X</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>

¹: variable stars should be flagged in these catalogues

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

## Table 2: Summary table of the External Data-Products (EDPs) Survey releases at $t_0+18$ months, and the frequencies of new releases

<table>
<thead>
<tr>
<th>Survey</th>
<th>EDP: Stacked tiles$^2$</th>
<th>EDP: Catalogues</th>
<th>EDP: Multi-epoch catalogues and light curves</th>
<th>When? $T_0+18$ months</th>
<th>Frequency: yearly</th>
<th>Survey final release (after 5$^{th}$ year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ULTRA-VISTA</td>
<td>Stacked image of all data up to that date (tile for deep part, and stripes for the ultra-deep one)</td>
<td>Aperture-matched multi-band catalogue from deep stack</td>
<td>No</td>
<td>x</td>
<td>x</td>
<td>yes</td>
</tr>
<tr>
<td>VHS$^3$</td>
<td>no</td>
<td>Source catalogue on the whole survey area available at the delivery date</td>
<td>No</td>
<td>x</td>
<td>x</td>
<td>yes</td>
</tr>
<tr>
<td>VIDEO</td>
<td>Stacked images of the fields up to the delivery date</td>
<td>Aperture-matched multi-band catalogue from deep stack of the fields</td>
<td>Yes</td>
<td>x</td>
<td>x</td>
<td>yes</td>
</tr>
<tr>
<td>VVV</td>
<td>x</td>
<td>Source catalogue on the whole survey area available at the delivery date</td>
<td>Yes - Multi epoch catalogue in $K_s$ band for the survey area available at delivery date</td>
<td>x</td>
<td>x</td>
<td>yes</td>
</tr>
<tr>
<td>VIKING$^3$</td>
<td>x</td>
<td></td>
<td>Yes</td>
<td>x</td>
<td>x</td>
<td>yes</td>
</tr>
<tr>
<td>VMC</td>
<td>x</td>
<td></td>
<td>Yes - Multi epoch catalogue for the survey area available at delivery date</td>
<td>x</td>
<td>x</td>
<td>yes</td>
</tr>
</tbody>
</table>

$^2$: for the bands see Table 1

$^3$: For VHS and VIKING, the Deliverable#1, the image tile, already has 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.
Phase 3: Infrastructures

Requirements set by EDP / Developed by SDD & EDP
Phase 3 : Tools

Components

  - User and **Operator** interface
  - Create/browse/edit programs/collections/releases
  - Close/submit releases
  - Used by PIs to manage delegations

- **Validation Tool**
  - User and Operator
  - Meta-data validation
  - Fits validation
  - Dataset/provenance validation

- **Upload**
  - Upload data to ESO via LFTP
  - Manages authentication (including delegation) via user portal

- **Ingestion Tool (backend)**
  - NGAS, keyword repository, phase3 DB
Monitoring the survey progress and data submission

HIP 5494
Magnitude: 5.88 (B-V: 1.45)
Absolute Magnitude: 3.59
RA/Dec (2000): 13h01m31.4s/ -25°27'26.7"
RA/Dec of Object: 13h01m31.4s/ -25°30'54"
Airmass: 1.74/ 1.45/ 2.0/ 3.2/ 3.5
Spectral Type: K0III
Distance: 340.0 light years
Parallax: 0.00900

Layer containing Data Products:
Layer containing RAW data:
Layer containing OB data:

OB
Regular
3892
Stray
3681
Observe coverage
3120.03 deg2
Stray coverage
2056.96 deg2

RAW
Regular
150114
Stray
1136
Observe coverage
3118.80 deg2
Stray coverage
13.7217 deg2

Data Products
Regular
3R3
Stray
F2Z
Regular coverage
34.5124 deg2
Stray coverage
34.4934 deg2

Completed OBs
Completed OBs
Completed OBs with DPs

OB Status
- (2800) - (4511) A (45) C (3673) D (77) E (413)
X (48) Y (225)

Filter
H (225) J (3696) K (9628) V (2188)

Programme ID
284.A-5026 (98) 284.C-5034 (102) 60.A-5285 (160)

Area (Union)

OB Execution Time

Run ID

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ESO Public Surveys Phase III Workshop 30.11.2010

ESO European Organisation for Astronomical Research in the Southern Hemisphere
One day workshop at the ESO HQ in Garching – 30 Nov, 2010;
Participants – PIs plus (up to) 2 team members from each survey team;
Short presentations by EDP-SDD;
Demo of the P3I;
Tutorials for the definition of data products releases, data validation and upload.
Phase 3 Workshop: who is who

✓ Phase 3 workflow and tools – Stefano Zampieri (SDD)
✓ VISTA public survey products types and format; Phase 3 concept and documentation – Joerg Retzlaff (EDP)
✓ Phase 3 Demo – Remco Slijkhuis (EDP) and Paulo Nunes (SDD)
✓ Phase 3 Tutorials - Remco Slijkhuis + Vincenzo Forchi (operator), Diego Sforna (SDD)
✓ EDP + SDD will assist you during the tutorials.
Phase 3 - start of operations

i. Phase 3 operations begin on Dec 15, 2010

ii. Today’s program and ESO presentations will become available from


i. Phase 3 documentation and user manuals available from

http://www.eso.org/sci/observing/phase3.html
**Phase 3 - start of operations**

**Programme**

08:50 – 09:00 Welcome (F. Comeran)

09:00 – 09:20 Phase 3 - an introduction (EDP - M. Arnaboldi)
   - Policies, timeline, users' responsibilities, monitoring data products submission with SVMT at ESO, ESO Archive interfaces

09:20 – 09:50 Phase 3 workflow and tools (S. Zampieri)
   - Definition of users/delegations, security and data storage, workflow

09:50 – 10:30 VISTA PS: types of products and their format (EDP - J. Retzlaff)
   - Pawprints, Tiles and single band catalogs, merged catalogs, etc.

10:30 – 10:45 Coffee break

10:45 – 11:45 Presentation by VISTA PIs - updates to the SMP- data products description and schedule for the delivery timeline

11:45 – 12:00 Phase 3 concepts and documentation (EDP - J. Retzlaff)

12:00 – 13:00 Phase 3 demo (P. Nunes, V. Forchi, D. Sforna, + EDP R. Slijkhuis)

13:00 – 13:45 Lunch break

13:45 – 14:15 Introduction to tutorials (EDP - R. Slijkhuis)

14:15 – 16:15 Tutorials

16:15 – 16:30 Coffee break

16:30 – 17:30 Feedback on Phase 3 tools, Discussion