Space and Ground-Based Survey Operations at OmegaCEN + Target

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Pool
Astronomical IT experts + Astronomers

- Wide-field datacenter
- Survey operations
- Science support center
- DFS expertise center
Data-centric + backward chaining (see Valentijn, Buddelmeijer)
The OmegaCAM Public Surveys

KiDS+VIKING = “10% Euclid”
ATLAS = “SDSS South”
VPHAS+ = “MW Hα map”

Available in: 
ASTROWISE

KiDS obs. progress: 22%
ATLAS obs. progress: 56%
VPHAS+ obs. progress: ~21%
- **Information system**: monitor, calib, pipeline, archive, science analysis
- 11 European nodes
- 260 users (astro, prod, dev)
- Federated DBase, storage, compute
- 2Pb storage, 45M files
- Web + Python user interface

For federated survey handling
Survey data management

- User
- Project
- Federated datacenter
### Quality Control

#### Quality: flags & timestamps

- **Target.verify()** #automated inspection
- **Target.quality_flags** #set by system
- **Target.inspect()** # User inspection
- **Target.is_valid=value** #set by user
  - 0,1,2 = bad,OK,Qualified - ready for delivery
- **Calib.timestamp_start,end** # validity time range
Calibrate the instrument not the data

(See Hanuschik on Wed)
03 September 2013

The ESO Science Archive Facility now provides community access to the first data products from the VST public survey projects. Following one year and a half of successful scientific operations of the VST, the ESO/VST public surveys have returned nearly 1.5 TB of reduced data products, which can be queried for and downloaded by the international community via dedicated query interfaces at the ESO Science Archive Facility (http://archive.eso.org/wdb/wdb/adp/phase3_imaging/form).

These surveys projects started surveying the Southern sky since October 2011, following the successful commissioning of the VST at the La Silla-Paranal observatory. A summary of their scientific goals and observing strategies is available at the following URL: http://www.eso.org/sci/observing/PublicSurveys/sciencePublicSurveys.html.

The first release of data from the KiDS and VPHAS+ surveys (1.5 TB) covers mostly the period from October 2011 to September 2012 and consists of astrometrically and photometrically calibrated mosaiced and coadded images (each 1.0 deg^2), weight maps and associated single band source lists in the different bands of each survey. Each public survey data release is accompanied by a comprehensive description that can be found at http://www.eso.org/sci/observing/phase3/data_releases.html. By accessing the first VST public release, the ESO community benefits from joint efforts by ESO, the PIs of the VST public survey projects and their collaborators. More details can be found on Phase 3 - News and Changes.
Science analysis with

- Morphometry (Galfit, GalPhot)
- Photometric redshifts
- Variability analysis (MDIA, VODIA)
- Advanced catalog handling
## High redshift QSOs

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<th>QSO</th>
<th>redshift</th>
<th>i</th>
<th>Z</th>
<th>Y</th>
<th>J</th>
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Strongly-lensed QSOs

QSO-galaxy lensing candidates

KiDS expected harvest

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<th>2013</th>
<th>KiDS adds</th>
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<td>~200</td>
<td>~1000</td>
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Courtesy C. Blokzijl
Looking ahead...
DFS expertise center

- **MUSE**: MUSE-WISE ready (see Brinchmann)
- **Euclid**: Mission Archive with ESAC, EXT data with Euclid-D
- **Gaia**: CU9 (archive) and visualization
- **MICADO**: Data Flow System Design lead (E-ELT)

- **Target+RUG**: Big Data R&D: visualization, databasing, storage (see Valentijn)
Concluding remarks

• Static Archive -> “3D Datacenter”
  – closed loop archive & pipelines
• “Data about data” + CDM = everything
• Pool SW/HW + resources supporting diverse projects
• Astronomy’s (IT) future is bright = ESO-surveys, ESO-MUSE, ESA-Gaia, ESA-Euclid, ESO-E-ELT
(Astro-)WISE in full depth

Volume 35, Issue 1-2, January 2013
Topical Issue: Astro-WISE

In this issue: 19 articles

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