Mid-Term Report for Subprojects A & C

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1 Introduction

The purpose tof the Mid-term Review is to verify the compliance of the first deliverables with the technical specifications. The report contains a description of the current status of the following deliverables:

- DR-01: Astrometric and photometric correction of dithered/jittered images

- DR-02: Stacking and mosaicing of dithered/jittered images

- DR-03: Stacking of dithered/jittered/"stared" spectra

- DR-08: Fringe correction of spectra and images

The deliverables DR-01 and DR-02 have a common timeline and are topically connected. Therefore they will be discussed together. The remaining deliverables are low-priority projects which have not yet started in agreement with the Statement of Work (VLT-SOW-ESO-19500-4802).

- DR-04: Mosaicing of spectral imaging data (3D cubes) - start: 01.10.2010

- DR-09: Calibration of spectra-polarimetry data - start: 01.06.2010

- DR-10: Source extraction in 3D cubes - start: 01.10.2010

- DR-11: Pattern matching for 1D and 2D data sets (images and spectra) - start: 01.07.2011

In the case of the deliverable DR-09, where at present no appropriate test data are available, it was mutually agreed to set a new start date, which is still pending.

The following detailed reports describing the algorithms, test data and validation procedures form part of the midterm report:

- DR-01/02 Report: Workflow (added with revised version of the midterm report)

- DR-01/02 Report: Background subtraction

- DR-01/02 Report: Astrometry

- DR-03 Report: Architecture of spectral coaddition recipe

The codes for this report are contained in the release `esosoft-0.0.3.tar.gz`. The software package contains the relevant CPL functions and instrument-independent recipes together with the documentation.

2 Deliverables DR-01 and DR-02

A protoype for the DR-01 and DR-02 deliverable is available including the relevant documentation. The prototype consists of two work packages:

- Background subtraction of optical and near-infrared images

- Astrometric and photometric correction of stacked images

For the background subtraction of optical and near-infrared images, six instrument-independent recipes and several supporting functions were developed. For the astrometry, it was decided early-on to base the recipes on the external programmes `SExtractor`, `scamp` and `SWarp` from the Terapix software suite. Three CPL-compliant wrapper recipes were developed to run these programmes in a DFS-compliant way.

The following schedule is foreseen:

- The quartlerly progress report will include the test results on astrometry (31.10.2010);

- The progress release esosoft-0.0.4 will contain the fixes listed in the mid-term report (early November 2010);

- Progress report with progress release: 01.12.2010 (esosoft-0.0.5);

- Acceptance release with user manual: 11.01.2011 (esosoft-0.1.0);

- Final release: 11.04.2011 (esosoft-1.0.0).

3 Deliverable DR-03

The project started 01.12.2009. At present only the 1D case is considered. Two work packages have been defined so far: Simple stacking of spectra originating from the same Observing Block (OB). Code development on the basis of basic CPL functions for the stacking of spectra has been performed and will be included in the next progress release (esosoft-0.0.4) in early November 2010. In a second work package the option of spectral rebinning will be included. In addition also the option to stack spectra originating from different OBs will be investigated. The 2D case is still pending.

4 Deliverable DR-08

The project started 01.06.2010. The next mile stone is the detailed specification on 31.10.2010. Some preliminary studies have been carried out in the frame of the algorithmic development for the deliverables DR-01 and DR-02. In particular the applicability of the two-step background-subtraction procedure was tested on imaging data affected by fringes. Positive results have been achieved. Further tests on spectral data are planned. The detailed specification document will be formulated on the basis of these tests (deadline 31.10.2010). The schedule will be kept as described in the Statement of Work.