- VVV SMP review –

RID=Review Item Discrepancy, RIC=Review Item Comment, RIQ=Review Item Question
Please use a separate page per RIx.

Reviewer: ESO Survey Team	
Document No	VVV SMP
RID, RIC or RIQ ?	RIQ
Section	Manpower and hardware capabilities devoted to data reduction and quality assessment
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RIx text

EST – Date 08.03.2007

1. There are no FTE committed to the specific survey data processing in addition to those of VDFS: The PI must provide detailed FTE for those parts of the data processing and the scientific analysis which is specific for the science goals of the survey in the revised survey management plan.

2. What is the PI involvement in the definition, trial and testing of the frame differencing software at WFAU? This should be specified in terms of FTE.

3. What if the VDFS upgrade does not include this? Has the team envisaged a backup solution?

4. The team should have a person responsible for preparing the survey OBS.

5. When submitting the revised SMP, the PI must provide a written statement from both CASU and WFAU managers that the two data centers will have the sufficient FTE commitment to support the data flow and the data processing needs as described by the PI in the VVV Survey Management Plan.

EST – Date 07.12.2007

<u>Open issues related to current Review item (RIX) after VISTA PS senior review (22.10.07) and EST report (28.06.07)</u>

VVV has one of the 3rd largest hours per FTE ratios (78 hrs FTE^{-1}) among VISTA public surveys. When compared with the other VISTA public surveys and their hrs FTE^{-1} ratios for the scientific analysis of the data products, the human resources are underestimated by a factor 2.

There seems to be inconsistencies between the FTE listed in the RiX answer and

in the revised SMP.

A strong concern is the absence of a risk management plan if 1) the correction for cross talk does not work in crowded fields and 2) the DIA approach either fails or cannot be implemented. According to the VVV SMP, WFAU will implement DIA – tentative plan is to have this ready for the 2nd and 3rd year of the survey. But this is statement is not supported by WFAU documentation (VDFS–VDF-VFA-VSA-002)

Which part of the team is responsible for the proper motion analysis?

See point related to the "conflict of loyalties" in the management structure of the VVV public survey and the VDFS detailed in RIX#4. The unanswered managerial issue is a strong concern for the successful implementation of the VVV survey.

Reply from Survey Team – Date 22.05.2007
Name: Dante Minniti, Valentin Ivanov, Phil Lucas, Jura Borissova

1. Team FTEs over the duration of the Survey (5 years) for the team outside the UK: one new postdoctoral researcher (2.5), Dante Minniti (2.5), Valentin Ivanov (1.5 – other than his service work for VISTA), Marina Rejkuba (1.5), Manuela Zoccali (1.5), Jura Borissova (1.5), Andrea Ahumada (2), Grzegorz Pietrzynski (1.5), Juan Jose Claria (1), Rudy Radostin (0.5), Andy Stephens (0.5), Beatriz Barbuy (1), Eduardo Bica (1), Maria Messineo (0.5), Giovanni Carraro (1), Giuliano Pignata (0.5), Rodolfo Barba (1), Wolfgang Gieren (0.5), Doug Geisler (0.5), Roberto Gamen (1), Ivo saviane (0.5), Ronald Menickent (1), Marcio Catelan (1), Lorenzo Monaco (0.5), Claus Tappert (0.5), and the rest of the team with epsilon (less than 0.5 FTEs each). Grand total: >27 FTEs.

2. The team members from Chile that will be involved in the definition, trial and testing of the DIA options at WFAU will be Dante Minniti, Valentin Ivanov, Jura Borissova, Manuela Zoccali, Marcio Catelan, Rodolfo Barba, Andrea Ahumada, Grzegorz Pietrzynski, and a new postdoctoral scientist at U. Catolica. WFAU scientists involved in this process will be Nigel Hambly and Nick Cross. UK scientists will be Jim Emerson, Phil Lucas, Andy Longmore, and a new postdoctoral scientist.

3. We have made clear that the Chile team alone is not proposing to reduce and analyze the full survey from scratch. Our proposal includes the UK team as member of the survey. The additional processing needed for the VVV is the DIA. WFAU will implement this DIA in the UK, as needed for the 2nd and 3rd year variability search. We have now devised a back-up plan in case this is not feasible, as requested. We would use the list driven photometry in apertures based on coordinates from Year 1 data, which will be produced by VDFS. CASU has tested this approach successfully in crowded fields. This back-up plan has some drawbacks with respect to the original

plan proposed (e.g. the depth would not be the same, there will be fewer variables detected).

4. The contact person leading the team responsible for the survey OBs (see Table 3) is Prof. Jura Borissova.

5. We provide written statements from the WFAU and CASU managers.

Reply to open issues related to current Review item (RIX) after VISTA PS senior review (22.10.07) and EST report (28.06.07)

Name: Lorenzo Morelli, Giuliano Pignata, Luigi Bedin, Manuela Zoccali, Dante Minniti, Phil Lucas

We have applied for funds in order to increase our manpower in a coordinated national effort, and have been successful. We have now the means to hire 5 fully dedicated postdocs for this project:
one funded by FONDAP already hired at Univ. Catolica: Pawel Pietrukowicz,
one funded by ESO/Chile Comite Mixto at Univ. Valparaiso, advertised,
one funded by FONDAP/BASAL at Univ. Concepcion, to be advertised,
one funded by ESO/Chile Comite Mixto at Univ. La Serena, advertised, and
one funded by BASAL at Univ. Catolica, to be advertised.
We have also applied for funding of 2 more VVV postdocs from MILENIO.
The UK/European part of the team has also secured funding for two more postdocs:
one located at Univ. Hertfordshire (50%), and
one located at Instituto de Astrofisica de Canarias (100%)
Also, we were not counting on advanced graduate students. The new FTEs available to the survey now more than doubles. This also brings the needed consistency.

Regarding the risk management plan, the correction for cross talk would be applied, and we will implement flags similar to 2MASS for these blemishes.

In addition, we have solid back up plans for the DIA. First and foremost, WFAU will implement list driven photometry. This is sufficient for our purposes if the DIA analysis gets delayed. Nonetheless, we would like to carry out the DIA analysis during the 3rd and 4th years. Therefore, Eamonn Kerins (Manchester U.) will assist in the development and testing of the DIA pipeline. He has recently built and successfully tested a DIA pipeline for UKIRT/WFCAM data in very crowded fields of the Galactic bulge, which was applied to the reduced images that had passed through VDFS. The VVV DIA pipeline will be simpler since the data are not microstepped. WFAU is committed to assist us with implementing our DIA pipeline in Edinburgh on the VVV data after we have optimized it for VISTA data. This needs to be in place during the 3rd year of our survey. In addition, the resources to run the DIA pipeline at Catolica will be in place, but shipping all the data overseas is not currently envisaged in our plans for the first few years, during this time it would be more productive to send people for extended visits to VDFS to accomplish specific tasks as needed by the

VVV survey.

The astrometric characterization of the VVV survey will be done by VDFS. The proper motion analysis of the VVV survey images will be carried out by the Chilean part of the team. This effort will be lead specifically by: L. Morelli (vast astrometric experience from SuperMACHO), G. Pignata (vast astrometry experience with ESSENCE), and L. Bedin (vast astrometry experience with WFI and HST).
The astrometry coming of the pipeline unit will be computed using the 2MASS infrared survey catalog whose precision is about 100mas. This order of magnitude in absolute astrometric error will be adequate to identify high proper motion sources in the VVV fields. Based on our experience with WFI (Anderson et al. 2006) and HAWK-I@VLT (Bedin et al. 2008, in preparation) we expect relative astrometry as good as 5 mas for a single well exposed stars. The relative astrometric precision will be than tested fitting the residual from the measured averaged centroid of a suitable sample of stars across multi-epochs frames with the relation sigma(X)=(C1)^2+(C2(sigma(PSF)/SN))^2 where C1 and C2 are constants, PSF is the sigma of point spread function and SN is the signal-to-noise ratio. This approach, already used by LM and GP in the SuperMACHOS/ESSENCE survey, allows to derive the relative astrometric precision as function of the image characteristics.

We have addressed the potential “conflict of loyalties” in RIX#4.