Visible & Infrared Survey Telescope for Astronomy

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Dear Andy

Following our recent discussions, I am writing to confirm our understanding of the work VOTC:UK will undertake in collaboration with the VISTA Data Flow System (VDFS) project which handles data from the UKIDSS and VISTA surveys. We have a pretty clear idea of our priorities, but would like to develop and formalise these work areas as soon as is practicable. This should involve both technical discussion with members of the VDFS science archive team and a discussion of detailed scientific requirement priorities with the VISTA survey PIs. The VDFS staff who will be involved are primarily Nigel Hambly, Nick Cross, and Mike Read from the science archive end at the Wide Field Astronomy Unit (WFAU) in Edinburgh. Both yourself and Richard McMahon can play key roles bridging VDFS and VOTC:UK in your roles as PIs of respectively the UKIDSS and VISTA Hemisphere Survey (VHS) surveys.

These are the prioritized tasks we particularly need doing.

Priority 1: Establishing a secure version of the Simple Image Access Protocol (SIAP). As well as needing authorised access, we want to make sure that what is returned goes beyond the standard minimum for SIAP services. We need associated tabular FITS catalogue products i.e. detection catalogues and confidence maps; cut-out regions as required; images returned as FITS or a graphical product, e.g. PNG; and optional support for catalogue source overlays and RGB images. The first stage of this at least is quite a urgent need, and could hopefully be achieved in your transition phase.

Priority 2: Implementing spatial/footprint coverage, so that users can tell quickly where there is coverage, possibly at millions of separate positions, without having to submit lots of fake queries. This is a very often repeated user requirement, which we currently find it hard to provide. This could be solved partly within the VO Registry, which needs progress on related protocols, and partly as a service at the database, implemented as an invokeable application. We need some careful analysis of the science requirements before plunging into a particular technological solution, so this is a perfect opportunity for collaboration.

Priority 3: Implementing an early Table Access protocol (TAP)/Astronomical Data Query Language (ADQL) service, so that VISTA & UKIDSS users can submit database queries in a standardised way. My understanding is that this is finally possible, now that the IVOA is on

the verge of agreement. As well as making it easier to re-use queries this will also give VISTA & UKIDSS improved international visibility.

Priority 4: Making massive server-side cross-matching possible. We have had a number of users enquire about million-to-billion row cross-matches with other databases, which is currently very hard to provide efficiently. This needs improvements in ADQL, and probably a grid-like deployment between shared services.

Priority 5: Developing a method to allow users to have personal user databases, including large subsets of the whole database stored temporarily, and also to set up shared collaboration areas, where consortia can store private datasets that they share. The first seems to be a question of deploying the newly agreed VOSpace technology. The second needs development of user authorisation and access control protocols, and some kind of friendly GUI that allows users to interface with these collaboration areas.

Priority 6: Giving our users increased benefit from the VO infrastructure, and common VO tools, but at the same time ability to use our own VDFS specific web pages and tools, and especially data mining applications that we will deploy. For this to work, we need you to build a server-side version of your "Astro Runtime" API. We will work with you to make sure the right requirements are input, and will collaborate on the technical design.

There is potentially quite a lot of work there! These 6 items will significantly improve the ease with which we can provide required data products from the science archive to users, and with which users can make use of these products.

On the management aspects I point out that VDFS has existing binding *operational* commitments to those consortia and organisations for which it is processing surveys (including in effect ESO as well as STFC), so that delivering the products promised, has to be our day to day priority, as well of course as carrying out other specific tasks that were funded by STFC. Collaborating with VOTC:UK will be very helpful to us, and our users, enabling things that we could not do ourselves, but cannot detract from our core mission. Our responsibilities, and the schedules and demands of VISTA and UKIDSS, will strongly influence how we can schedule our inputs on these items. We look forward to further development of means to accomplish these tasks, so we can both understand any consequent resources required and carefully plan their commitment (if available). In particular as the first VISTA surveys start to roll in later this year, and get accessed by their PIs, we are likely to be exceptionally heavily stretched for a period of at least six-twelve months.

Yours sincerely,

Jim Emerson

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Jim Emerson
(on behalf of the VISTA Data Flow System)