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PREPARED BY	ORGANIZATION	DATE
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Change Record

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1.0	8 Dec 2014	Final Version

I OVERVIEW

This document provides the Common Astronomy Software Applications (CASA) response to the recommendations of the 2014 CASA Users Committee (CUC), as described in the October 2014 CASA Users Committee Report.

We thank the CASA Users Committee for their time and effort. Their annual report provides useful perspective on the perceived state of the CASA Program from the external community. I have followed the structure of the committee report, incorporating recommendations from the Executive summary in the relevant section. In this document I have extracted and summarized the recommendations of the users committee (in black) from their report and provided the response of the CASA project (in blue italics).

2 CAPABILITIES, USABILITY, RELIABILITY, PERFORMANCE

2.1 Capabilities

- Complete the CLEAN Refactor with high priority.

We continue to pursue this, with much of the functionality becoming available in experimental mode in our imminent release. We will continue to add and extend capabilities as resource allow.

- The UC recommends “relatively little emphasis be put on capabilities that are readily duplicated in other software packages. For this strategy to be most effective, CASA data import/export tasks must be clearly documented”.

We believe that the import / export of images using the FITS standard is well supported and documented, we will address issues with image FITS on a case-by-case basis as they are identified. Based on this input I have increased the priority of updating support for uvFITS by resolving known issues, although we are beginning to investigate these issues in the current development cycle (CASA-4.4.), substantial improvements will most likely be delivered in the following development cycle. We note that full access to the data through python is provided by the table tool, which allows maximum flexibility.

2.2 Performance

- Emphasize improvements in performance and parallelization, and to improve the overall robustness of basic operation.

Our current planning aligns with this emphasis on performance and parallelization, with our target being a full end to end parallel path available in the 4.4 release. We are working with the newly formed NRAO software test team to address concerns of robustness, the results of this effort are beginning to impact the released software. We have also formalized our internal scientific validation testing which will help with robustness issues as well..

- Ensure that the on-line hardware recommendations are updated as appropriate.

It is our intention to routinely benchmark the CASA package and provide suitable guidance on this page, we note the priority given by the committee. This page will be updated for each CASA release, no later than one month after the formal release of the package.

2.3 Reliability

- [The committee recommends] that steps to improve CASA reliability should receive more emphasis.

Increasing reliability equates to more rigorous and thorough testing. We are working with the NRAO software test team to address these issues.

- [The committee suggests] to take (or continue) measures to reduce the chance of oversight due to the small number of eyes on each CASA program/task.

Development in CASA is becoming more unified, with multiple members of the development team working on issues together, this is a partial mitigation. We have put in place a more formal process of validation with testing from the scientific staff at NRAO and the ALMA partners which will also help to address this issue.

2.4 Usability

- Our general recommendation is that it is not necessary for the CASA team to produce more documentation, but to improve and *curate better* the existing documentation.

We understand the committee's suggestion, and in general will attempt to improve our documentation and make it more accessible to users. Specific suggestions from the committee on how to improve the documentation are welcome.

- User surveys can uncover problematic issues and help to guide future development; we would like to work with the CASA team to develop and deploy more user surveys.

We think that a user survey is an excellent idea and will work with the committee to design and implement it. We would like to announce the survey in the initial issue of the CASA Newsletter (February), which will require developing the survey in Jan. 2015.

- We also suggest that the growing CASA user base would be well served by better communication from the CASA team, with regular updates of ongoing and planned developments, as well as prioritized bug fixes, in an easily digestible form. One possibility to accomplish this might be a CASA Newsletter...

Agreed, we have begun planning for a semi-annual newsletter. For a steady state we are planning on releasing the newsletter on the first of June and November. Having missed the November release this year we are planning a special “first issue” targeted at Feb. this year.

- We recommend that Mac OS usage of CASA be monitored closely (perhaps through user surveys), to determine the level of future support required for Mac platforms.

We agree that it is important to track the evolving use of CASA on OSX systems. The user survey will provide an opportunity to understand what the OSX packages are used for (calibration, imaging, image analysis) and what types of data sets are being used.

- If upcoming ALMA and EVLA datasets generally cannot be reduced on the laptops and typical desktop systems [...], then more resources will need to be deployed to offer other options for CASA processing.

While we expect that performance improvements and CASA parallelization will allow larger data sets to be processed on typical desktops, we do recognize a need for alternative resources. Both the NAASC and NMASC have limited cluster computing resources available to external observers on a first come first serve basis. This is quite popular with VLA users – more than 150 have used the Socorro cluster. Additionally DMS is investigating deploying CASA images on cloud computing resources like Amazon ECS or NSF funded research computing clusters through XSEDE.

3 RELATIVE PRIORITIES OF FUNCTIONAL AREAS

- High priority should be put on automatic calibration procedures in pipeline.

Our current planning is consistent with this prioritization.

- One area where users express a clear demand for improvement is for clarity in the visibility import / export tasks.

See comment in Section 2.1 second bullet

- While these single-dish developments are undeniably important, we sensed that a larger relative effort was put toward this than to other, perhaps more pressing needs.

During the current period of migration from Scan Table to Measurement Set based systems the single dish team is understaffed, thus the relatively long planned transition period. Once this change is complete single dish and interferometric developments will be more synchronized allowing greater flexibility in staffing.

- This CARTA development also highlights the fact that the CASA team needs to prepare users an upcoming transition in visualization capabilities by providing more (and more regular) information on the remaining plans for the CASA viewer and plotms, the promised

capabilities of CARTA (and gaps in its capabilities), and how CARTA will work within CASA.

Agreed, and as we begin to plan the deployment of the CARTA system we will ensure that information is provided (i.e. through the CASA newsletter). We anticipate that the two will co-exist for a short period to ease the transition.

4 PIPELINES

- The pipeline should be made available to all users.

Agreed, and the initial release of the ALMA pipeline has now been accomplished. For the short term I expect that we will continue to have two releases (one without the pipeline and one with) in the long term all distributions of CASA will come with the pipeline.

- With respect to ALMA, we would like to see the backwards compatibility of the pipeline to past datasets (mainly Cycle 0 and 1) more clearly defined.

This is primarily an ALMA project issue. This topic was discussed at the recent ALMA Coordinated planning meeting and is being considered by the ALMA project.

5 BARRIERS TO ADOPTION AND COMMUNITY INPUT

5.1 Speed

- We suggest that some of this dissatisfaction might be alleviated if key CASA tasks provided simple estimates of the run time expected based on the input parameters and hardware configuration.

We will investigate creating such tools and verify our ability to accurately predict runtimes (this tool is only useful if it is approximately accurate).

5.2 Needs

- It would help serve this latter group if software interfaces are clearly defined and timely information is provided about the evolving landscape of CASA developments.

We will create a mailing list intended to support these advanced users. Our intention is to announce this mailing list in the inaugural newsletter.

5.3 User Interaction

- Improve feedback to users on helpdesk/ticket disposition, especially where challenging problems may take a long time to address, or will not be addressed.

A page with this information has been produced (<http://casa.nrao.edu/hdtickets>), and is dynamically updated. This page is available from the casa.nrao.edu via [Getting Help > CASA Helpdesk > CASA Ticket Status](#). We welcome the committees feedback on this mechanism.

- ... we urge access to summary results of the CASA prioritization process.

We agree to this in principle although are still discussing how best to accomplish this in a meaningful way. At the very least we will use the forum of the CASA Newsletter to provide a high level summary, how to provide a slightly more detailed summary is what is under discussion.

6 SUPPORT FOR OTHER TELESCOPES

- ...we encourage continuing the policy of CASA support of other telescopes on a best effort basis.

Agreed.

- Major changes formulated by external groups should be addressed only if they provide the resources (funding and manpower) needed to implement these changes.

Although we will need to consider each such request individually, we will take the above statement as our guiding policy.

- We suggest as a goal to have a well-defined framework [for collaboration] for external groups to utilize, avoiding individually tailored solutions where possible.

Although such a framework would be ideal, we have doubts about its suitability to the wide range of types of potential collaborators. We will seek to develop such a framework as possible.

- ... it should be clear in the documentation and directly on the CASA helpdesk front page that the helpdesk is amenable to submissions by users of the wider group of telescopes using CASA.

We believe that the CASA department of the NRAO helpdesk encourages entry of tickets from other telescopes, having the requisite fields and advertising as the CASA helpdesk. We note however that the ALMA helpdesk is much more targeted at ALMA issues, we have inquired to the ALMA project about adding text to their helpdesk similar to “For CASA issues relating to projects other than ALMA please go to the NRAO helpdesk at ...”

The project thanks the committee for their time and efforts. The report provides valuable insights to the users view of the CASA project. We appreciate their constructive and realizable suggestions and critiques. We look forward to a continuing working relationship on many of the items identified in their report, particularly the user survey, documentation curation, and formalization of data interfaces.