

*** = highest priority

** = high priority

* = medium priority

' ' = no / low priority (retain for future consideration)

Totals: 17 x ***, 19 x **, 12 x *, 10 x ' '

p = performance, c = calibration, f = flagging, i = imaging, v = visualization & analysis, o = other:

ppcccccfiivvvvvvoo (***)

ccccfiivvvvvvooooo (**)

pcfiiivvvvooo (*)

iiivvvvooo ()

1. Performance improvements (2 x ***, 1 x *, p)

- a. *** Continued development of testing and regressions, including benchmarking, for quantitative understanding of performance status.
 - Evaluation of tasks that are identified as bottlenecks for processing (preliminary list: clearcal, applycal, exportuvfits)
- b. *** Expansion of parallelization options and usability (beyond time-splitting), especially for imaging and self-calibration
- c. * Pipeline-based model for data processing (to avoid unnecessary passes through large data sets)

2. Calibration (4 x ***, 4 x **, 1 x *, c)

- a. *** Development of a clear calibration plan for the way in which calibration is handled. This will have substantial impact on much of the calibration-related development, and needs to be well-documented.
- b. *** Ability to apply calibration across MSs; i.e. apply calibration products derived from one MS to a different MS.
- c. *** Frequency-dependent application of opacity corrections and gain curves, without need to loop over spectral windows.
- d. *** Ability to fit the spectral index & curvature of an arbitrary source and input to subsequent calibration. Needed for non-standard bandpass calibrators, often at low (RFI, frequent bandpass determination) and high (faint flux calibrators) frequencies.
- e. ** Ability to easily flag on and flag from the system temperature-related calibration tables.
- f. ** Improvement and unification of smoothing and interpolation options (a., for on-the-fly use): e.g., boxcar smoothing (CAS-27); the ability to perform frequency interpolation of calibration products for cross-spectral window calibration application
- g. Ability to manipulate/apply data weights:
 - ** REWAY-like task (weighting based on data RMS; may be useful for combining data from multiple configurations in absence of system temperature information)
 - ** ability to change the way in which weights are used
 - * greater flexibility in using gencal to manipulate weights

3. Flagging (1 x ***, 1 x **, 1 x *, f)

- a. *** Full integration and testing of currently available autoflagging algorithms. Note that these should all be implemented using the same visualization framework.
 - *** tfcrop: full implementation of the interactive viewer, testing against EVLA data
 - ** Implementation of other already-available CASA algorithms: 'timemed', 'freqmed', 'uvbin', 'sprej', 'extendflag' (still needs some development work).
 - Flagging by data weights (ARDG input needed)
 - Using ALMA heuristics (input needed ALMA pipeline developers)
 - Flagging using polarization information

- b. ** Make more effective use of the FLAG_CMD table. All tasks which flag data should have the ability to write to FLAG_CMD instead of flagging the data, with appropriate REASON codes. Operations which produce channel-specific flags, such as autoflagging and clipping, should provide the option to write commands to FLAG_CMD as well.
- c. * Improvement of interactive flagging in plotms (unification with what is available in msview).

4. Imaging (2 x ***, 1 x **, 2 x *, 2 x ; i)

- a. *** Ongoing implementation of MS-MFS algorithm (CAS-2480)
 - 'clocktime' parameter to estimate how long a run will take
 - Support for outlier fields (CAS-2664)
- b. *** Ongoing implementation of wide-field, wide-band imaging techniques (e.g., combinations with mosaics).
- c. clean improvements
 - * gui for real-time parameter updates
 - ** Ability to cleanly break out of a run with option to restart from break point
 - * Evaluation and implementation of proposed clean-task reorganization
- d. Improving efficiency of chaniter (CAS-2198).
- e. Ability to regridding masks for different image sizes (need to investigate further - could be a bug)

5. Visualization & Analysis (6 x ***, 7 x **, 4 x *, 5 x ; v)

- a. plotms improvements:
 - *** Improve scriptability: gui-free plotting, ability to access wide range of parameters in task interface
 - *** Full integration of calibration table plotting in plotms
 - ** Multipanel plotting and overplotting
 - * Ability to plot ratios of quantities (i.e., weights)
 - Ability to plot closure quantities
 - Ability to apply calibration on-the-fly
- b. msview improvements:
 - *** Ability to select data without fear of auto-loading (it should respect the "apply" button and not try to load on-the-fly)
 - *** Optimization for large datasets -- currently, data are reloaded more than necessary.
 - *** Add ability to plot channel/frequency vs. time, with ability to iterate over baselines (AIPS SPFLG)
 - ** Ability to channel-average
 - Ability to plot every nth channel, integration
- c. imview improvements:
 - *** Ability to easily create, manipulate, and save regions in imview
 - ** Completion of scriptability and refinement of interface to match other tasks where possible
 - ** Improvement of the spectral plotting tool in imview
 - * Ability to perform arbitrary P-V slices through data
 - * Interface improvement: minimize shrinkage as additional images are loaded, perhaps by detaching information panels (or placing on side; 'landscape' mode)
 - Investigate and add AIPS++ / Karma viewer utilities
 - Integration of the viewer with splatalog (will tie together with spectral plotting tool)
- d. ** Ability for imfit and imstat to perform per-plane image analysis
- e. ** Ability to determine robust estimates of image RMS
- f. ** Ability to define multiple velocity systems within a single image
- g. * Task to compare model/image with uv data (AIPS EVAUV)

6. Other (2 x ***, 6 x **, 3 x *, 3 x ; o)

- a. *** Full implementation of new regions format
- b. Documentation clean-up and improvement
 - *** Improve documentation and examples for toolkit
 - ** Elimination of current help par.<parameter> system
 - * Implementation of help <task>.<parameter> via xml markup
- c. ** Improving robustness of import/exportuvfits (CAS-2860)
- d. ** Clean up and improve history information written to MSs and images (check original plan for implementation)
- e. ** Complete the AIPS++ toolkit conversion
- f. ** Addition of FFT-shift / sinc-function gridding to cvel (CAS-2250)
- g. ** Integrate scan-intent selection in all relevant tasks
- j. * Completeness check between information available in SDM and what is propagated to MS
- k. * Consistency check between information available in SDM and what is propagated to MS
- l. Develop a plugin infrastructure for contributed code
- h. ° / ** Support and use of ephemeris table when available
- i. ° / ** If Doppler tracking is enabled, provide necessary support