

# To-Do and Wish List

## High Priority

- ~~Cluster configuration file standard definition \* Adapting various clients (genmachines / threads) to make use of cluster definition file~~
- ~~Add large (~1 TB) dataset with variety of modes on Data Fabric (CR)
 
  - Synchronize data fabric test datasets at several sites. (Bonn, Curtin, NRAO)
  - Regression testing scripts (AD)~~
- ~~Amplitude correction for primary beam effects for multifield projects (available in AIPS now, but not fully tested)~~
- ~~IPP alternatives~~
- ~~Xcube support (at least one way of getting Xcube data into DiFX)~~

## Medium Priority

- ~~A watchdog which can kill an unresponsive job after a configurable amount of time (HR)~~
- ~~Timerange selection in difx2fits~~
- ~~Speed up interlaced VDIF code for nativemk5datastream~~
- ~~Fix the problem where interlaced VDIF packets don't all start at the same time for all threads~~
- ~~Find and fix the millions of MODE errors that sometimes occur (ATD) **Thought to be fixed**~~
- ~~Add project code to difx messages~~
- ~~Choose framework for unit testing. Implement test cases (JM)~~
- ~~Add DiFX diagnostics~~
- ~~Storing the original pointing source somewhere in the FITS file (plus the attendant AIPS changes)~~
- ~~Add per-IF phase polynomial in the calc file (and delay polynomial, too?)~~
- ~~Documentation
 
  - Doxygen of mpifxcorr source - ~~automatically installed locally~~, also someone mirror to a webserver~~
- ~~evlbi
 
  - reconnection/long term drop-outs (CP)
  - reliability with UDP data (CP)
  - real-time delay/rate adjustment (CP)~~
- ~~Maintain database of benchmarking results (JM)~~
- ~~Phased array (RS, CR).~~
- ~~visplot (CP, JS)~~
- ~~Investigate sampler stats monitoring (AD/WB/CP)~~
- ~~subband distribution/parallelisation (with VDIF) (AD/CP)
 
  - replumbing/refactoring vex2difx setup~~
- ~~Transition to using band centres instead of band edges (WB)~~
- ~~Baseband data generator for producing test datasets. (WB)~~
- ~~Parallelised calc server / Efficiency gains in CALC (same time, different sources etc)~~
- ~~Store polynomial tau(l, m) generalized delay model in FITS (WB,JM)~~
- ~~Chase up and eliminate the cause of occasional "Somehow Visibility X ended up with Y+1 subintegrations - was expecting only Y" errors **Thought to be fixed**~~
- ~~Mixed module and file list on one station~~
- ~~Convert all LSB bands to USB on unpacking~~

**Low Priority**

- Check the relative signs of 1-bit / 2-bit unpacking
- Source selection / deselection in difx2fits
- IF selection in difx2fits
- addZoomFreq in the SETUP section (applies to all antennas)
- Documentation Algorithms
  - monitoring, etc - (list of error codes) (AD)
- Play back from both Mk5 banks in parallel (WB)
- Still produce one FITS file even when there was a clock change during the correlation
- vex2difx to create an input file setup to be used with vlbi\_fake
- ~~Complete Support for VDIF on module directories~~
- Refactoring the mpifxcorr/mk5daemon libraries and merging functionality
- Move to a binary format for pcal files and name by datastream not by antenna name
- vex2 support (relies on vex2 finalization and some support from field systems)
- On-the-fly application of calibration (bandpasses etc) with appropriate accountability
- Modernize sniffer
- cleanup of DiFX error messages
- K5 format support (CP)
- Space VLBI
  - Baseline dependent averaging
- eVLBI gui
- Generic startup scripts (CR)
  - Documentation of startup philosophy
- Shifted FT (moving channel boundary to edge of band) (AD)
- DiFX2fits uv shifting in trunk (JM/AD)
- Auditing / refactoring the amplitude scaling
- Pulsar predictor support in "polyco"
- Get rid of printing to screen in mark5access (change to be called and printed from elsewhere)
- Get Eric to improve AIPS PCAL (multi tone)
- Improve the runtime predictor (make better use of the new cluster configuration file, better estimate true load)
- Restitching contiguous zoom bands into wider bands (e.g. for ALMA)

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