

# ALBiUS Related Work – CASA/ NRAO

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# Context

- EVLA shared risk observing Q1 2010
  - 10 station correlator data, 10's of GB, becoming routine
- ALMA High-Site commissioning Q4 2009
  - First (dynamic) fringes in Chile last week
- Both projects have significant demands on CASA
  - Some overlap with ALBiUS, e.g. performance related
  - NRAO's defined major responsibility, global fringe fitting, is only of modest ALMA/EVLA priority
    - We are open to transferring funding to advance the schedule

# Interoperability

- Framework (6.1.1)
  - Steady progress improving AIPS/CASA UVFITS interchange
    - The route for EVLA data to get into AIPS
    - Next step is a document
  - Raw data format (Science Data Model/Binary Data Format (SDM/BDF)) agreed between ALMA/EVLA
    - CASA & Gildas have fillers
- Distributed ParselTongue (6.1.2)
  - CASA “external tasks” package distribution for binding “external” functionality to CASA task
  - CASA tasks/tools can now be called from pure Python (not just lpython)
  - Cluster processing (SPMD) using lpython infrastructure (see EVLA memo #133)
    - Distributed flagging/calibration/imaging
    - Will be turned into more of a production facility by ALMA Pipeline team

# Global Fringe Fitting (6.2.1)

- Work at NRAO unlikely to start before 2010 Q1
  - Is anyone else in a position to kick this off?
- Default “Plan”
  - V1: Basic fringe fitting for ALMA/EVLA, ~2010 Q3 (NRAO)
  - V2: VLBI/eMerlin version, ~2011 Q2? (JIVE/UMAN)
- Things that could in-principle be done in advance of V1
  - Define task inputs
  - Implement more advanced fitting algorithm
  - Any Interest? Start a small working group?

# Other

- **Primary Beam/Mosaicing (6.2.3)**
  - Extension of PB-correction (Bhatnagar et al., A&A 487, 419-429(2008) to wide-band observations
  - Includes correction for time-variable PB (rotation of the PB)
  - Work in process for extension to mosaicking and full-Stokes imaging
- **Distributed Processing Calibration (6.2.5)**
  - Python level SPMD approach; parallel split (across spectral windows) followed by self-calibration (gain & bandpass)
  - Scales as expected
  - Some calibrations need to be split in different orders (e.g., all spectral windows, divided by time)

# Other (2)

- Data inspection & excision (6.3.2)
  - New GUI data plotter/flagger
    - Like plotxy, only much, much faster
  - Two kinds of automated flagging (Rau RFI &ALMA Pipeline heuristics) being added to flagdata
- Source Parameterization (6.3.3) (Related Asects)
  - ASP clean (Bhatnagar)
  - MFS with spectral index terms (Rau)
    - CASA task imlementation this cycle