EHT software telecon minutes

Date: 29 June 2016, 3PM – 5PM
Present: Assorted EHT and BHC software people, myself

The first hour consisted of introductions and summaries of the respective institutes. I gave a brief overview of the work and status here at JIVE. There is a lot of work being done on imaging algorithms. A second topic shard between many teams is synthetic data generation. The South African team clearly has a lead in this. Other topics are limited to one or two teams: correlation, monitoring & control, pre-processing of the data, fringe fitting, scattering in the ISM and polarisation calibration.

As for fringe fitting: it was mentioned that HOPS now has an issue tracker and feature request option, but since Geoff Crew seems to be the only person actually working on the implementation, this is probably limited to small issues and features only. Nevertheless, at some point we should do a verification of our CASA routines against their HOPS work, using a well defined set of data.

Lindy provided a good overview of the data-flow and components in the working group (see attached), we discussed if there were blatant omissions but couldn't find any. My main comment was that fringe fitting is part of the calibration, and should not be separated. Also, the meta-data is needed as input for this (and other parts) which is not obvious from this chart. Meta-data acquisition was mentioned several times as a high priority topic, and also the storage and data-format of both meta-data and visibilities.

We discussed the structuring of the working groups, but it didn't help that half the people were involved in a separate discussion (including a draft document with proposed groups). In a subsequent e-mail there was some more discussion. Based on the flow-chart for the software group as a whole, there are four natural groups that can be formed: data acquisition and correlation, calibration, imaging and synthetic data generation, which I suggested to Lindy. I also suggested to have the group leads form an intermediate layer between the workgroups and the rest of the project, to streamline communications.

Remo asked Lindy, Geoff and myself to suggest some topics for a workshop this fall. The workshop will be small, and most likely in Nijmegen or Bonn. No more than 10-15 core people will attend, and discuss a few select topics, while having access to other people outside of the meeting by webex to get additional input where needed. After discussing this briefly with Mark, my suggestion for the top 3 items is:
- data format
- meta-data acquisition & storage
- comparison and verification between synthetic data packages

For a verification of fringecal and other VLBI capabilities in CASA it is too early. We would like to do that with only the Nijmegen team at some point late this year or early next year.

I've tried to make clear that the JIVE purpose is more generic than just data processing for EHT, and that we are too limited in funding and man-power to commit to organising workshops and attending meetings in full force. However, on the whole I think it is good news that some level of organisation is picking up in EHT, and a local workshop in Nijmegen should be feasible.

Attached: Lindy's overview of the software work flow.

EHT software workflow

Topics: observation, correlation, fringe fitting, calibration, imaging and model fitting

Legend:
- topic
- software
- data product
- final data product

Observation: Observation setup, Monitor & Control; frequency and polarization setup; schedule, scan log; maser log; Mark6, R2DBE; VLBI data; APHIDS preprocessor; Tsys, weather, gain curve, other site metadata

Correlation: delay/rate parameters; correlation setup; DifX software correlator

Fringe fitting: fringe fitting; coherent averaging; incoherent averaging; ad-hoc phase; polconvert; complex visibilities; visibility amplitudes

Calibration: a-priori calibration; self-calibration; gain solutions; calibrated visibilities; array data, external model; closure phase; closure amplitude; fractional polarization

Imaging and model fitting: imaging and model fitting; model parameters