CASA Overview - 2019

Ryan Raba

Agenda

Thursday, October 3, 2019		
08:30	Executive Session	
09:00	Welcome	Glendenning
09:15	CASA Overview and News	Raba
10:00	Break	
10:15	CARTA	Wang
11:00	VLBI	Moellenbrock
11:30	CASA Users	Emonts
12:00	Lunch	
13:00	Documentation	Emonts
13:30	Pipeline / SRDP	Masters
14:00	Imaging	Rao
14:45	Break	
15:00	Telemetry	Raba
15:30	CASA 6	Raba
16:15	Executive Session	
18:00	Dinner - Vivace	2244 Ivy Rd

Friday, October 4, 2019		
08:30	Single Dish	Nakazato
09:00	Performance & benchmarking	Castro
09:30	Testing/reliability	Castro
10:00	Break	
10:15	CASA Next Generation Infrastructure	Raba
11:00	CUC requests / Q&A	
12:00	Lunch	
13:00	Executive Session	
15:00	Preliminary report-out (open)	
16:00	End meeting	

CASA Staffing Updates

- Project Scientist Transition
  - **Juergen Ott** moving off to VLASS
  - **Jennifer Donovan Meyer** taking over (was Validation lead)
  - Responsible for stakeholder requirements and priorities
- Scientific Development Lead / Deputy CASA Lead
  - **Urvashi Rao Venkata**
  - Translates stakeholder requirements to development plans
  - Guides science development
- Verification Test Lead
  - **Sandra Castro**
  - Ensure CASA execution matches documentation
- Validation Lead
  - ***Vacant***
  - Ensure CASA execution meets stakeholder / science needs

CASA Staffing – Full Roster

Scientific Development – Urvashi Rao Venkata (Lead)
- George Moellenbrock (calibration)
- Neal Schweighart* (calibration)
- Kumar Golap (imaging)
- Tak Tsutsumi (imaging)
- Jan-Willem Steeb (imaging)
- *Vacant* (imaging)
- Andrew McNichols* (simulator)
- Dave Mehringer* (statwt, image analysis)
- Sandra Castro* (flagging)
- Federico Montesino* (uv manipulation)

Single-Dish Development - Takeshi Nakazato (Lead)
- Wataru Kawasaki
- Renaud Miel
- Suminori Nishie

Data Visualization
- Pam Ford
- Christy Reynolds*

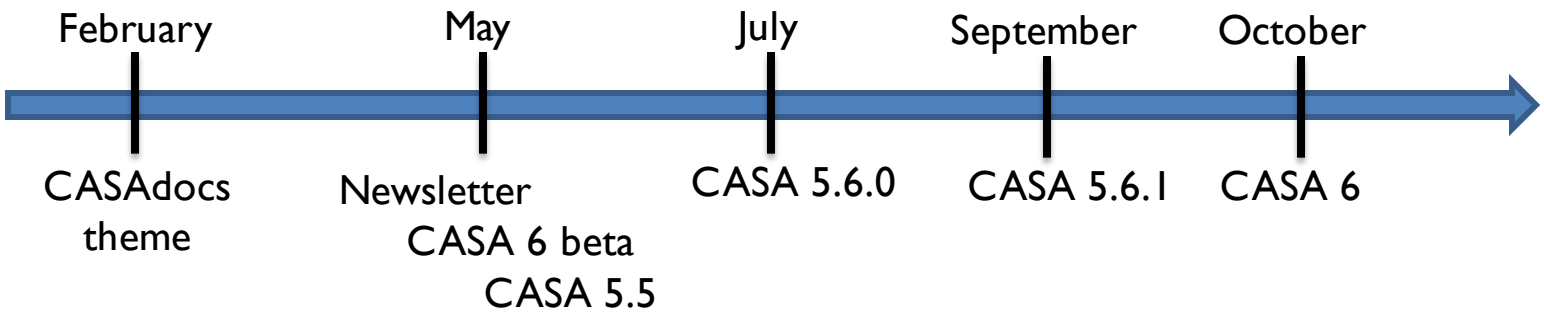
Bjorn Emonts (user liaison)
Jennifer Donovan Meyer (project scientist)
Ryan Raba (team lead)

Infrastructure Development
- Darrell Schiebel (NRAO Lead, architecture, CNGI)
- Ville Suoranta (build/test tools, telemetry/crash reporter)
- Enrique Garcia (vi/vb2, tvi)
- Dirk Petry (import/export, specialized analysis)
- Andrew McNichols* (CNGI)
- Bob Garwood* (filler, import/export, CNGI)
- Sandra Castro* (ESO Lead, HPC)
- Federico Montesino* (HPC)
- *Vacant*

Verification Testing – Sandra Castro (Lead)
- Akeem Wells
- Neal Schweighart*
- Bob Garwood*
- Dave Mehringer*
- Christy Reynolds*

Validation Testing – *Vacant* (Lead)
- *CASA Stakeholders*
- *NRAO Science Staff*
- *Data Analysts*

Accomplishments – Year In Review



Accomplishments – Year In Review

- New tasks introduced: **apparentsens**, **polfromgain**, **sdpolaverage**, **nrobeamaverage**
- New capabilities added to **fringefit**, **gaincal**, **polcal**, **immath**, **bandpass**, **statwt**, **rerefant**, **importfitsidi** and **plotms**
- **tclean** updates: new weighting options, auto-multithresh now functions with polarization data, new parameter *'smallscalebias'* for *deconvolver* = *'mtmfs'* more efficiently cleans signal on different spatial scales
- **tclean**: updated suite of 30+ functional tests to evaluate various imaging modes relating to joint mosaicing and wideband imaging
- **tsdimaging** has new modes to track ephemeris objects
- **simobserve** can now create multi-channel MeasurementSets from a component list
- CASA6 – casatools and casatasks pip wheels

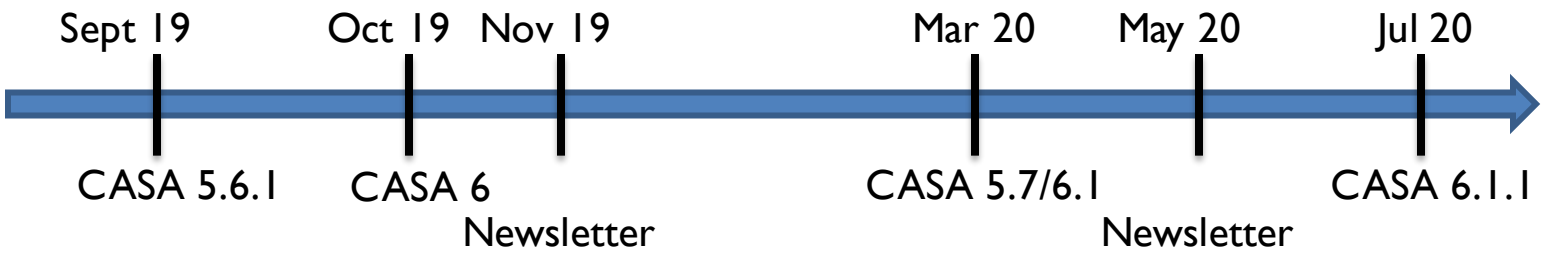
Focus Areas

- Performance and Reliability
  - Benchmarks
  - Crash Rates
- User Experience
  - Datamining
  - Telemetry
  - Helpdesk Monitoring
- Verification Testing
  - Prove that CASA does what the documentation describes
  - Functional and Stakeholder levels
- Plan for the Future
  - Study modern developments in software engineering
  - Begin to develop next generation prototypes

Current Development Priorities

- Transition from CASA 5.x to 6.x
  - Support Pipeline transition
  - Develop new CASAguides
- Tclean parallel processing refactor
  - Simplify processing control, unify serial and parallel numerical output
- Tclean major-minor cycle memory reduction
- Tclean MTMFS performance optimization
- Create and use pointing calibration tables
- ASDM updates for ALMA Cycle 8
- Scripting interface to CARTA
- Verification Test Development
- Performance Benchmark Development

Future Timeline



Projects

- CASA 6 – initial release imminent
  - Migrate to Python 3
  - Modularize Components – tools / tasks / GUIs
  - Package for standard python environments
- CARTA – 1.3 in development
  - Replacement for CASA Viewer
  - Scalable to very large data sizes
  - Capable of local and remote operation
- MSv3 – complete
  - Schema update complete
  - Implementation will be separate project TBD
  - http://casacore.github.io/casacore-notes/264.pdf
- CNGI – early stages
  - CASA Next Generation Infrastructure
  - Leads to (but is not itself) next gen CASA and next gen Visualization