



# CASA 6

Ryan Raba



# Goals

- Transition to Python 3.6
- Modularize CASA Components
- Repackage CASA distributions
- Support Transition of CASA Users and Pipeline

# Modularization

- Different parts of CASA have different dependencies and requirements
- Allow users to pick only the pieces they want
  - CASAtools
  - CASAtasks
  - CASAmpi
  - CASAshell
  - CASAplotms
  - CASAvviewer
  - CASAaddons – not yet available
- Everything together - CASAlith

# Repackage Distributions

- Pythonic installation and usage of each module

```
pip install --extra-index-url https://casa-pip.nrao.edu/repository/casa-wheel/simple casatools
```

- Use like a normal python package

```
from casatasks import listobs
```

```
rc = listobs("mydata.ms")
```

- Monolithic tar file download still available (CASAlith)
  - Replicates appearance of CASA 5.6

# Jupyter, Colab, and You

- CASA6 makes it easy(-ish) to run in other Python environments
- Jupyter notebooks are a popular new way of sharing Python code
  - Ideally suited for code tutorials, exploration, and collaborative development
  - Runs in a virtual machine, often located on cloud hardware
- Google Colaboratory is a free online Jupyter environment
  - <https://colab.research.google.com>
  - Up to 26 GB RAM, 350 GB storage, dual core, GPU-enabled
- CASAtools and CASAtasks work in Colab / Jupyter
  - Example: <https://colab.research.google.com/drive/16ddmCSQxyy4cijYvpZNNpX5SsVfb-wM6>
  - Still working on support for PlotMS and Viewer
  - Interactive GUI actions are not currently compatible

# Recent Development

- CASAtools and CASAtasks beta available to users since last May Newsletter
  - Good amount of use and positive feedback
- CASAmpi added in June
  - Add parallelization support when present, but with additional dependencies (openmpi)
- CASApotms and CASAvviewer added in July
  - Bugs and compatibility issues discovered
  - Extensive cleanup over August – September
- CASAshell added in July
  - Replicates appearance of CASA 5.6 – allows monolithic tar distribution
  - Extensive cleanup over August - September

# Current Status

- Streamline behavior of CASApotms and CASAviwer
  - External C++ applications not running inside Python
  - Controlled through Python wrapper functions of similar name
  - gRPC inter-process communication necessary
- Finish rolling up monolithic distribution
  - Exactly replicate appearance of old CASA
  - Include everything still being used, leave behind what is no longer used
- Transition full CASA development team
  - New build process
  - New test plan
- Support Pipeline Transition

# Forward Plan

- Finalize 6.0 as modular non-GUI pieces only
  - Most of which are currently available
- Push monolithic tar file and full GUI support to 6.1
  - Continue refining the behavior of PlotMS and Viewer
  - Continue refining appearance to match that of CASA5
- Begin posting Colab-based CASAguides
  - Technical guides to start
  - Scientific guides later
- Next CASA Release – Dual 5.7/6.1
  - March 2020
  - Same shared C++, largely identical Python