

# CASA

Common Astronomy Software Applications

# The CASA software for radio astronomy development for users and pipelines

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CASA is the primary data processing software for Atacama Large Millimeter Array and the Karl G. Jansky Very Large, and is often used also for other radio telescopes. CASA's core functionalities are manual data processing and support of pipelines for ALMA and the VLA. This poster gives an overview of the CASA project, and highlights new developments.

<https://casa.nrao.edu>

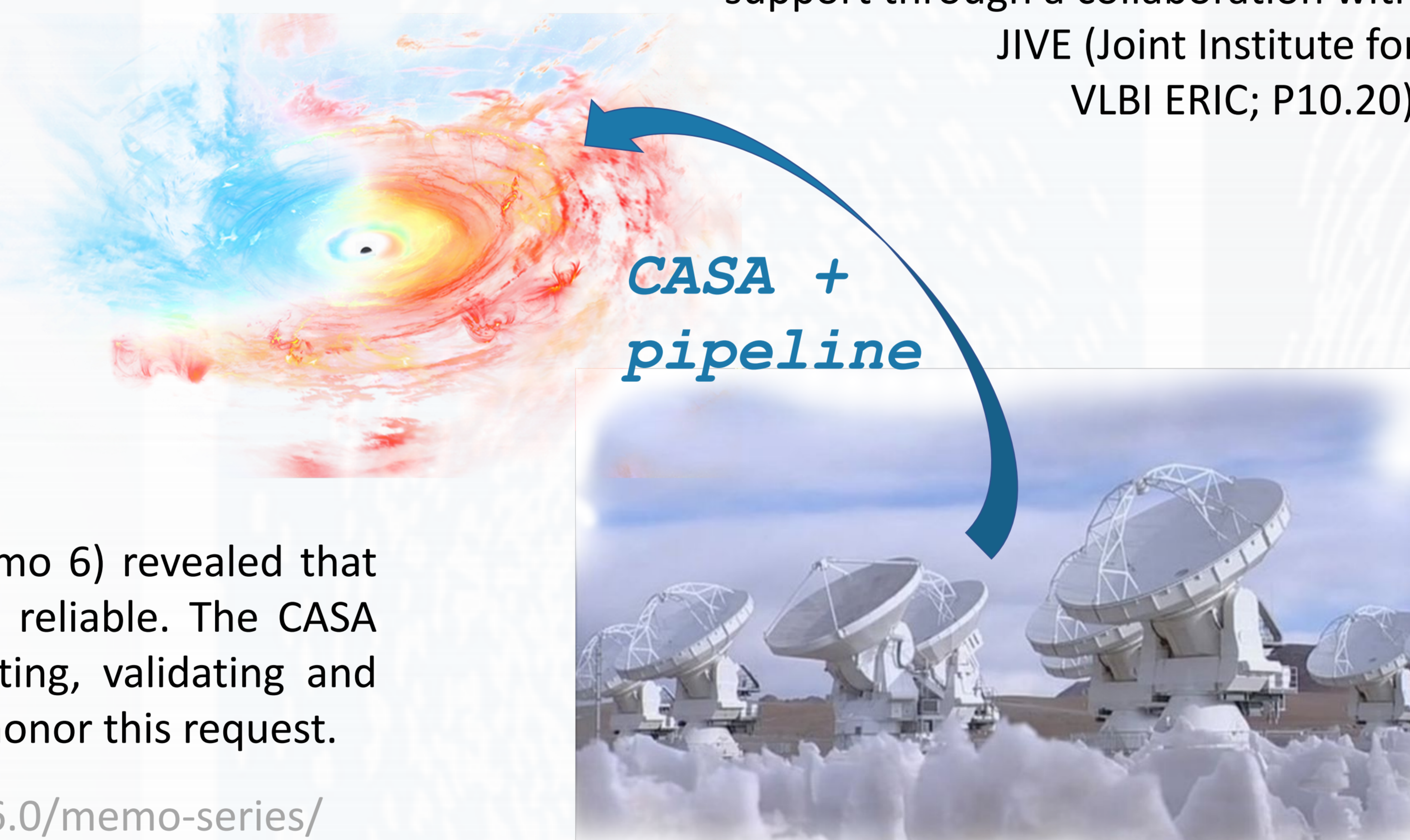


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## Supporting ALMA and VLA pipelines Calibration & Imaging

A core aspect of CASA development is support of the ALMA, VLA and VLA Sky Survey (VLASS) pipelines. The implementation of algorithms and processing techniques requested by the pipelines also improved manual calibration and imaging. Recent CASA highlights include: improved wide-field imaging, automated masking, new single-dish tasks, and improved polarization capabilities (P5.4).

CASA is also offering increased VLBI support through a collaboration with JIVE (Joint Institute for VLBI ERIC; P10.20).



## Documentation: CASA Docs

CASA Docs is the official CASA documentation. It offers general information on data processing and detailed task descriptions. With a more modern look and better functionality, we hope that the improved of CASA Docs will enhance user experience of CASA.

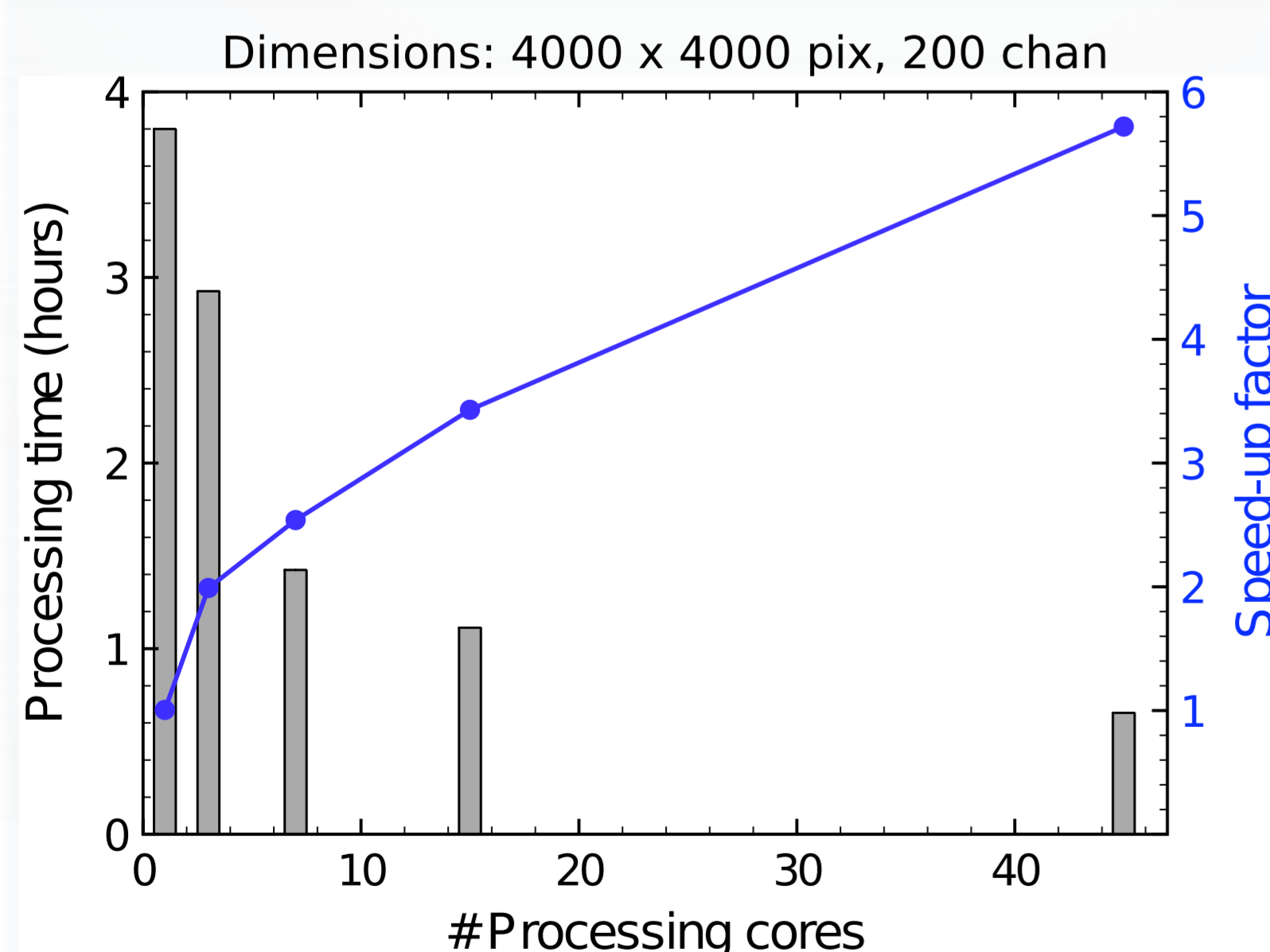
<https://casa.nrao.edu/casadocs>

## Reliability

The 2018 CASA User Survey (CASA Memo 6) revealed that our users request to make CASA more reliable. The CASA team adopted a new approach to testing, validating and documentation CASA developments to honor this request.

<https://casa.nrao.edu/casadocs/casa-5.6.0/memo-series/>

## Performance: Parallelization



Parallel imaging using multiple cores decreases the runtime of tclean for large data sets. This mode can be invoked in the mpicasa environment on normal MeasurementSet data. Parallel imaging is the default mode in the ALMA pipeline and endorsed for general use.

## Functionality: CASA 6

### Flexibility in python™

CASA has always been distributed as a single application, including a Python interpreter and all of the libraries, packages and modules. CASA 6 will be reorganized to offer a modular approach, where users have the flexibility to build CASA tools and tasks in their Python environment (see poster P5.6).

## Visualization: CARTA



The Cube Analysis and Rendering Tool for Astronomy (CARTA) is the next-generation image visualization and analysis tool for ALMA, VLA and SKA pathfinders. CARTA steadily progresses, and v.1.2 offers enhanced layout, tiled rendering and region support. CARTA will eventually replace the CASA Viewer.

CARTA consortium: ASIAA (TW), IDIA (ZA), NRAO (US), Univ. Alberta (CA)

<https://cartavis.github.io>

**Careers:** the CASA team is continuously growing, and we are often looking for qualified software engineers and scientists to join us! See <http://jobs.jobvite.com/nrao> for the latest job info

**Ideas or feedback?** Please contact us at [casa-feedback@nrao.edu](mailto:casa-feedback@nrao.edu)



The National Radio Astronomy Observatory guides the international team of developers and scientists who maintain the CASA Software. NRAO is a facility of the National Science Foundation operated under cooperative agreement by Associated Universities, Inc.

