

Atacama Large Millimeter Array	ALMA- Revision:1.0 2003-01-06 <i>Requirements</i> Peter Schilke
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DRUI requirements

Requirements

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1 Introduction

This document intends to define software requirements for the Data Reduction User Interface (DRUI). Eventually, it is thought to be included in Software Memo 11. The requirements reflect the discussion at the ALMA software IDR in Garching in december 2002. In the following, “pipeline” is supposed to mean the science or imaging pipeline.

2 Requirements

Requirement priorities in the following have four values:

- 0** Essential feature: Must be present from the start.
- 1** Must be there for Interim Science period, when the system is commissioned to produce meaningful science results.
- 2** Must be there when the system is widely open for Science as an operational (though not hardware completed) instrument.
- 3** Desirable feature for the final, complete system.

These priorities should be reflected in the order of implementation of the features involved.

2.1 General Requirements

- 1.0–R1** The DRUI shall provide interactive access to processing of ALMA data.
- 1.0–R2** The default user access shall be through GUIs.
- 1.0–R3** All functions shall be accessible through user generated scripts.
- 1.0–R4** It shall be possible to work both with local data, and data from the ALMA archive.
- 1.0–R5** The users shall be able to run the DRUI at their home institutions, even without network access (in the latter case provided that the data are available locally).
- 1.0–R6** It shall be possible to exactly reproduce the outcome of the pipeline. This does not mean that the data reduction engines have to be absolutely identical to the one of the pipeline, which may run on specialized hardware, e.g. with parallelized code, but they should produce identical output with identical input.
- 1.0–R7** The default path should be the one that the pipeline heuristics would have chosen.
- 1.0–R8** At each step of the pipeline processing, it shall be possible to modify parameters of processing programs. An example would be to change the size of the restoring beam.
- 1.0–R9** At each branching point of the heuristics decision tree, it shall be possible to modify the path chosen. An example would be to choose MEM as deconvolution algorithm although the heuristics recommends CLEAN.
- 1.0–R10** The granularity of the interaction shall be chosen by the user, i.e. the DRUI should be hierarchical, allowing actions from simply reproducing the pipeline results in one step to modifying all parameters in all steps.
- 1.0–R11** The user should be able to choose strategies for the processing, e.g. going for maximum resolution, or maximum sensitivity, or minimum sidelobes. Each strategy shall set a default decision path and default parameters, which then are modifiable.
- 1.0–R12** At each step of the processing, it shall be possible to visualize the intermediate results graphically.
- 1.0–R13** At each step of the processing, it shall be possible to save the intermediate results.
- 1.0–R14** At each step of the processing, it shall be possible to produce a script such that this script acting on the raw input data shall reproduce the state of the data at the point of the step where the script was produced.
- 1.0–R15** The full documentation shall be available online to the user at any time.
- 1.0–R16** The interfaces to the data reduction engines shall be well documented.

1.0–R17 It shall be possible for each user to use different data reduction engines, provided that they conform to the interfaces.