



The ALMA Observing Tool: Proposal Preparation & Submission

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Overview

- Summary of ALMA Concepts
- Summary of ALMA OT Concepts
- Downloading & Installation Options
- The OT GUI overview
- Phase I - Preparing your proposal
- Science Goal details
- Validation and other tools
- Proposal Summary
- Proposal Submission
- Phase II SB Generation
- SB overview
- How the SB interfaces to observing



The Team

Collaboration between UK ATC, ESO and NAOJ

Developers:

UKATC: Alan Bridger, Stewart Williams, Stewart McLay, *David Clarke, Nuria Lorente, Martin Folger*

ESO: Marcus Schilling, *Joseph Schwarz, Maurizio Chavan, Heiko Sommer*

NAOJ: Hiroshi Yatagai
(Approx 2.9 FTE)

Science:

- *Andy Biggs, Liz Humphries, Leonardo Testi +*
- *Toshihiro Handa, Harvey Liszt, Suzanna Randall, and many others*

Documentation:

Rein Warmels +



ALMA Observing Concepts

ALMA Will be *dynamically scheduled* in a service mode operation. Observing is specified by *sensitivity* goals.

- Observing will be divided into *Scheduling Blocks* (SchedBlocks or SBs)
- Each SB will be ~ 30 minutes in length (weather considerations)
- “Best” SB at any moment will be observed (weather, science priority, project completion, ...)
- SBs considered “complete” when have met individual goals
- SBs grouped into “sets” (Observing Unit Sets, ObsUnitSets) which:
 - provide the data processing trigger
 - allow for dependencies between SBs
 - provide the ability to create hierarchies
- In Early Science expect manual SB selection, manual pipeline processing, simple SB sets



Observing Preparation: The ALMA OT

- *Key Aim: Make it easy to use ALMA!*
- A Single Tool for Phase I (Proposals), and Phase II (Observing Preparation)
 - Supporting "Novice" users,
 - But also "Experts" & Staff
 - Support for program review
 - Portable, easy to use, graphical user interface, user feedback of automatic choices, data rates, resources.
 - New release for each Proposal Cycle



ALMA OT: Download & Installation

- Java-based desktop client program: runs on a number of platforms:
 - Tested on Windows (XP or later), Mac OS X (10.5 & 10.6), GNU/Linux (several distributions)
 - Standard Oracle (Sun) JavaVM required. Current version uses Java 1.6
- Two primary methods of installation
 - **Java Web Start:** Using standard web browser, just click on hyperlink or image in a web page, & tool is downloaded & locally installed. Subsequent version updates are automatically searched for & can be installed whenever OT is launched
Preferred installation option
 - **Tarball:** Download and install from standard tarball file. Full instructions provided. Option of including recommended Java.





ALMA OT: Primary Concepts

- OT captures observing information in the form of *Science Goals*
- Science Goals are common to both Phase I proposals and Phase II observing preparation
- Science cases, technical cases, figures, etc. included as PDF files
- Output of the OT after Phase II is sets of SBs
 - The OT performs automatic generation of SBs from Science Goals
 - SB may also be created from scratch (*not in Early Science*)



ALMA OT: Basic Layout

The screenshot displays the ALMA Observing Tool (OT) interface for a project titled "REAL: Mosaic of the Sombrero galaxy (MGR real 1) (0)". The interface is divided into several main sections:

- Project Structure Panel:** Located on the left, it shows a hierarchical tree of the project structure, including "Science Plan", "Sombbrero-3", and "Sombbrero 12mArray 58".
- Editors Panel:** The central area, titled "Editors", contains a main image viewer showing a mosaic of the Sombrero galaxy. Below the image are various parameters and controls, including "FOV Parameters" (Frequency used, Antenna Diameter, Main beam size) and "Image Query" (Image Server, Image Size).
- Feedback Panel:** Located at the bottom right, it displays "Project PASSED validation with 0 errors and 0 warnings" and "No errors found".
- Template Panel:** Located at the bottom left, it contains a "Template library" section with instructions on how to use the templates.
- Overview Panel:** Located at the bottom center, it provides a high-level overview of the observing program, including steps like "Validate your observing program" and "Submit Observing Program".

Yellow callout boxes with black borders and diagonal stripes identify the following panels:

- Project Structure Panel
- Editors Panel
- Feedback Panel
- Template Panel
- Overview Panel

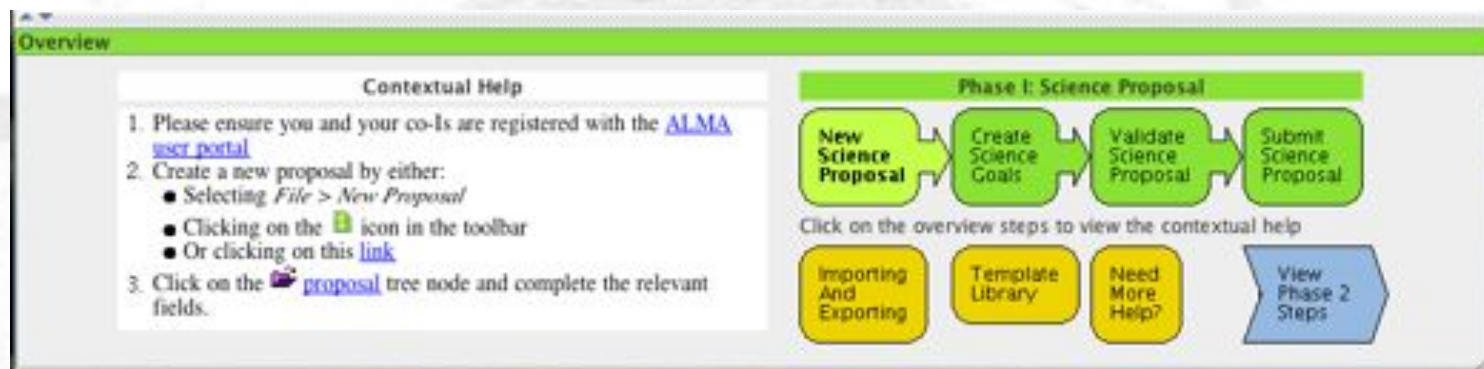


Phase I



Phase I: Getting Started

- All investigators must register at the ALMA User Portal
- Create new proposal, & enter initial info into appropriate Editor Panel form
 - Proposal title, abstract, identify PI & co-Is (checked against user database), indicate scientific category, etc.
 - Attach PDF files containing the science case, technical case, tables, figures, etc. Checked for length during validation.
- Create as many Phase 1 Science Goals as needed





Basic Information

Proposal Information

Proposal Title: A modest proposal

Proposal Cycle: 2010.3

Abstract (max. 300 words): A very modest abstract.

Buttons: Commit Changes, Launch Editor

Scientific Category:

- Cosmology and the High Redshift Universe
- Galaxies and Galactic Nuclei
- ISM/Astrochemistry/Star Formation/protoplanetary disks/exoplanets
- Stellar Evolution/the Sun and the Solar System

Proposal Type:

- Standard
- Target Of Opportunity

Student Project:

Continuation:

Related Proposals: [Would like to coordinate observing with IRAM proposal...](#)

Previous Proposals: [Empty field]

Recent Publications: [Empty field]



Basic Information

Investigator search constraints

Name ▼ contains

Full name	Email	Affiliation	ALMA ID
John Lennon	john@thebeatles.com	organization	john
John Rambo	rambo@arnie.com	unset	rambo
John Hibbard	jhibbard@nrao.edu	NRAD	jhibbard
Andy Biggs	abiggs@eso.org	European Southern Obs	abiggs
Eelco van Kampen	evkampen@eso.org	unset	eelco
Eelco vanKampen	evkampen@eso.org	unset	eelco_ta
John Hibbard	jhibbard@nrao.edu	unset	jhibbard_ta
Andy Chen	andy.chen@nao.ac.jp	unset	achen
Doug Johnstone	douglas.johnstone@nrc	unset	djohnstone



Basic Information

Investigators

Title	Full name	Email	Affiliation	ALMA ID	Executive
PI	Alan Bridger	alan.bridger@stfc.a...	unset	abridger	EU
Col	John Hibbard	jhibbard@nrao.edu	NRAO	jhibbard	NA
Col	Andy Biggs	abiggs@eso.org	European Southern...	abiggs	CHILE
Col	Eelco van Kampen	evkampen@eso.org	unset	eeico	EU

[Set PI...](#) [Add Col...](#) [Remove Col](#) [Add from Proposal...](#)

Science Case and Supporting Documents

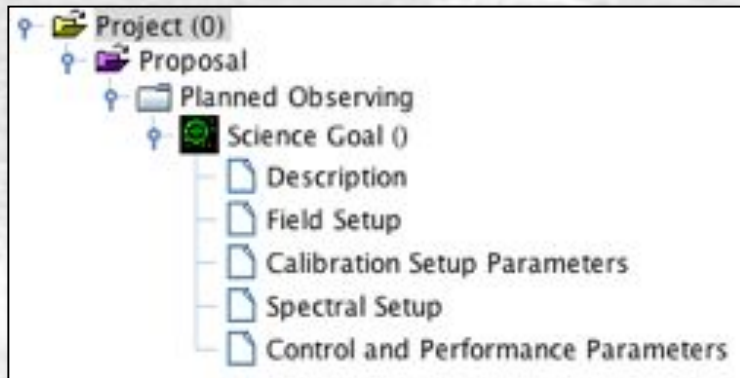
Science Case(Mandatory, PDF, 2 pages max.)	ScienceCase.pdf	Attach	Detach	View
Technical Case(Optional, PDF, 2 pages max.)		Attach	Detach	View
Figures(Optional, PDF, 2 pages max.)	OrgChart.pdf	Attach	Detach	View
Tables(Optional, PDF, 2 pages max.)		Attach	Detach	View



Science Goals

- **Science Goals**

- **Philosophically:** Aim to abstract intended science from complexities of telescope
- **Practically:** Container (with some header information) containing 5 types of entry:
 - **Description** - Optional description of science goal
 - **Field Setup** - Used to denote which sky field(s) are to be observed
 - **Calibration Setup Parameters** - Used to specify calibration strategy (types and details of calibrators, whether they are user-specified or system-selected)
 - **Spectral Setup** - Used to specify frequency ranges, resolutions, etc. to be used
 - **Control and Performance Parameters** - Used to specify performance goals: angular resolution, largest scale, sensitivity, dynamic range, etc
- Currently one spectral setup and one sensitivity target per goal.





Field Setup & the Spatial Editor

Online name resolvers & connections to remote archive servers available

Spatial Editor

Field Setup Form

Target: Sombrero

Source Name: Sombrero

Source Coordinates: RA 12:39:59.431, Dec -11:37:22.995

Source Velocity: 1197.000 km/s

Field Center Coordinates: Offset Longitude -2.09282 arcsec, Offset Latitude 10.65108 arcsec



Calibration Setup Parameters

- Fully Automatic setup, or
- User setup using
 - queries and/or
 - fixed calibrators
- Search calibrator catalogues, using...

Goal Calibrators

Let the system decide how to calibrate your goal by selecting System selects calibration strategy, or specify your own calibration strategy and calibrator selection criteria with the User-defined calibration option.

With user-defined calibration selected, add a dynamic calibrator (one that is found from the ALMA calibrator catalogue at execution time) or a fixed calibrator source with the Add Dynamic Calibrator... and Add Fixed Calibrator... buttons respectively. Remove calibrations by selecting a calibration and clicking Delete Selected Calibration. Edit the calibrator selection with the Edit Criteria... and Edit Target... buttons.

System selects calibration strategy

User-defined calibration

Calibration Int...	Target Type	Source Name	RA	Dec	
Pointing	Dynamic Calbr...		00:00:00.000...	00:00:00.000...	Edit Criteria...
Phase	Dynamic Calbr...		00:00:00.000...	00:00:00.000...	Edit Criteria...
Bandpass	Dynamic Calbr...		00:00:00.000...	00:00:00.000...	Edit Criteria...
Delay	Dynamic Calbr...		00:00:00.000...	00:00:00.000...	Edit Criteria...
Amplitude	Fixed Target	Uranus	N/A	N/A	Edit Target...
Phase	Fixed Target	J115513-294948	11:55:15.290	-29:49:54.400	Edit Target...

Add Dynamic Calibrator... Add Fixed Calibrator... Delete Selected Calibration



The Calibrator Query Tool

Amplitude Calibrator Query Editor

Calibrator Search Parameters

The ALMA calibrator catalogue will be filtered to find sources matching the selection criteria below. Enter a positive search radius to enable the cone search and/or enter values into the flux, frequency and time parameter pairs to enable these filters. Parameter pairs left as zero will disable the filter. If all filters are disabled, the entire calibrator catalogue will be returned.

This filter has been removed from your search criteria. Enter a non-zero value to enable the filter.

Cone Search
RA: 13:29:52.698 Dec: 47:11:42.928
Search Radius ("): 20.0

Frequency
Min: 70.00000 GHz Max: 120 GHz

Flux
Min: 0.5 Jy Max: 1 Jy

Time Since Observed
Min (days): 0.0 Max (days): 0.0

Calibrator Tag
UNDEFINED

Search Results

Click the 'Test Query' button to find the set of calibrators that match your constraints.

These results could be different at project execution time

Source Name	RA	Dec	Separation	Frequency	Flux Density	Last Observed
1146+399	11:46:58.297	39:58:34.304	19.871"	99.931 GHz	810 mJy	2003-11-09T
1203+480	12:03:29.854	48:03:15.629	14.532"	99.931 GHz	540 mJy	2003-11-09T
1331+305 (3c...)	13:31:08.287	30:30:32.958	16.688"	99.931 GHz	660 mJy	2003-09-29T
1506+426	15:06:53.041	42:39:25.035	17.681"	99.931 GHz	530 mJy	2004-01-01T

using



Spectral Setup & Visualisation

- Simple interface to spectral setup
- Hides LO & correlator as much as possible...
- Single average frequency for continuum
- Simple setups with ≤ 4 windows just choose your windows
- For more you need to manage correlator resources (*not available in first call*)

Visualisation

Observed Frequency

300,000 320,000 340,000 360,000 380,000

Frequency in Target Frame

Receiver Bands Transmission Other Transitions Select Other Transitions Pan To Line Zoom To Band Reset

Spectral Type

Spectral Type: Choose the type of spectral observation you wish to make

Polarization Products desired

Up to 4 spectral elements/windows

Center Freq Rest	Center Freq Sky	Transition	Bandwidth Resolution	Continuum
345.79599 GHz	344.41805 GHz	COv=0 3-2	62.5MHz, 15.259KHz (0.013 km/s)	<input type="checkbox"/>
331.50000 GHz	330.17903 GHz		2000MHz, 15.625MHz (14.187 km/s)	<input checked="" type="checkbox"/>
343.50000 GHz	342.13121 GHz		2000MHz, 15.625MHz (13.691 km/s)	<input checked="" type="checkbox"/>
333.50000 GHz	332.17106 GHz	13COv=0 3-2	62.5MHz, 15.259KHz (0.014 km/s)	<input type="checkbox"/>

Feedback

Targets

Source Name	Velocity	System
Sombrero	11	

Spectral Setup



Line Selection Tool (Splatalogue Queries)

- Select lines from a subset of the Splatalogue (when offline)
- Or query full splatalog (when online)
- Query by species, description, frequency/band, where detected
- Or you can simply type in your frequencies



Line Selection Tool (Splatalogue Queries)

Filter / Species

 Include description in search

ALMA Band
 1 2 3 4 5 6 7 8 9 10

Sky Frequency (GHz)
 Min: 211 Max: 275

Line Type
 Show: all lines

Help
 The information below is only enabled when a query is run and one ALMA band is selected using the controls above.

Transitions main window

Transition	Description	Sky Frequency	Rest Frequency	Upper-state Energy	Obs. Intensity	5σ μ ²
H2CO 3(2,2)-2(2,1)	Formaldehyde	218.476 GHz	218.476 GHz	68.09 K	1.8	9.06 D ³
29SiC2 9(2,7)-8(2,6)	Silicon Carbide	218.507 GHz	218.507 GHz	59.46 K		49.05 D ³
SiN N=5-4	Silicon Mononitride	218.512 GHz	218.512 GHz	31.49 K		41.57 D ³
SiN N=5-4	Silicon Mononitride	218.513 GHz	218.513 GHz	31.49 K	0.02	34.41 D ³
SiN N=5-4	Silicon Mononitride	218.514 GHz	218.514 GHz	31.49 K		28.47 D ³
H2CO 3(2,3)-2(2,0)	Formaldehyde	218.76 GHz	218.76 GHz	68.09 K	1.5	9.06 D ³
HNCO v=0 10(1,10)-9(1,9)	Isocyanic Acid	218.981 GHz	218.981 GHz	101.08 K	0.24	24.44 D ³
c-H2COCH2 6(3,4)-5(2,3)	Ethylene Oxide	219.513 GHz	219.513 GHz	40.27 K	0.38	33.06 D ³
HNCO v=0 10(4,6)-9(4,5)	Isocyanic Acid	219.547 GHz	219.547 GHz	208.71 K		17.32 D ³
HNCO v=0 10(4,7)-9(4,6)	Isocyanic Acid	219.547 GHz	219.547 GHz	208.71 K	0.4	17.32 D ³
HNCO v=0 10(3,7)-9(3,6)	Isocyanic Acid	219.657 GHz	219.657 GHz	432.96 K	0.4	20.45 D ³
HNCO v=0 10(3,8)-9(3,7)	Isocyanic Acid	219.657 GHz	219.657 GHz	432.96 K		20.45 D ³
HNCO v=0 10(2,9)-9(2,8)	Isocyanic Acid	219.734 GHz	219.734 GHz	228.29 K	0.8	22.88 D ³
HNCO v=0 10(2,8)-9(2,7)	Isocyanic Acid	219.737 GHz	219.737 GHz	228.29 K	0.8	22.88 D ³
HNCO v=0 10(0,10)-9(0,9)	Isocyanic Acid	219.798 GHz	219.798 GHz	58.02 K	0.3	24.96 D ³
c-HCDOH 10(0,10)-9(0,9)	Formic Acid	220.018 GHz	220.018 GHz	58.62 K	0.3	20.14 D ³
CO v=0 2-1	Carbon Monoxide	220.399 GHz	220.399 GHz	15.87 K	17	0.02 D ³
CO v=0 10(1,9)-9(1,8)	Isocyanic Acid	220.585 GHz	220.585 GHz	101.5 K	0.11	24.44 D ³
CO v=0 10(0,10)-9(0,9)	Silicon Carbide	220.774 GHz	220.774 GHz	59.77 K	0.87	56.67 D ³
CO v=0 9(2,7)-8(2,6)	Silicon Carbide	222.009 GHz	222.009 GHz	60.24 K		49.06 D ³
CO 11(3,9)-10(3,8)	Ketene	222.2 GHz	222.2 GHz	181.37 K	15.2	61.6 D ³
CO 11(3,8)-10(3,7)	Ketene	222.2 GHz	222.2 GHz	181.37 K	15.2	61.6 D ³
CO 11(2,10)-10(2,9)	Ketene	222.229 GHz	222.229 GHz	116.19 K	0.2	21.45 D ³
CO 11(2,9)-10(2,8)	Ketene	222.314 GHz	222.314 GHz	116.2 K	0.2	21.45 D ³
CO 11(2,10)-10(2,9)	Ketene	222.314 GHz	222.314 GHz	116.2 K	0.03	18.82 D ³

Add to Selected Transitions

Selected transitions

Transition	Description	Sky Frequency	Rest Frequency	Upper-state Energy	Obs. Intensity	5σ μ ²
CO v=0 2-1	Carbon Monoxide	220.399 GHz	220.399 GHz	15.87 K	17	0.02 D ³

Remove from Selected Transitions

Done

Search Results

Query Specification

Search Results to be Used



Control & Performance Parameters

Control and Performance Parameters ?

Representative Frequency

Antenna Beamsize (λ/D)

Angular Resolution

Largest Scale

Desired Sensitivity per Beam equivalent to

Dynamic Range

Do you request complementary ACA Observations? Yes No

Is this observing time constrained (occultations, coordinated observing...)? Yes No



Sensitivity Calculator

- Calculate integration time to sensitivity, or vice-versa (time per beam)
- Modify number of antennas (defaults to expected availability for cycle)
- Web version available

Sensitivity Calculator

Common Parameters

Dec	-11:37:22.995		
Polarization	Dual ▼		
Observing Frequency	344.41805	GHz	▼
Bandwidth per Polarization	15.25879	kHz	▼
Water Vapour Column Density	Calculator Chooses ▼		
tau/Tsky	tau=0.210, Tsky=55.558 K		
Tsys	267.990 K		

Individual Parameters

	12m Array		7m Array		Total Power Array
Number of Antennas	50		12		4
Resolution	0.10000	arcsec ▼	5.984649	arcsec	14.961622 arcsec
Sensitivity(rms)	0.10000	Jy ▼	0.10000	Jy ▼	0.10000 Jy ▼
(equivalent to)	113.64775	K ▼	0.03173	K ▼	0.00328 K ▼
Integration Time	3.90033	min ▼	10.42017	h ▼	61.66679 h ▼

Integration Time Unit Option: Automatic ▼

Calculate Integration Time Calculate Sensitivity Close



Template Library

- Selection of example Science Goals and common setups
- Drag and drop (or copy/paste) from the Library into proposal
- May copy whole Science Goal or components (e.g. spectral setup only)



Validation

- Provides a series of automated checks on the validity of the proposal at Phase I & Phase II
- Handles both errors & warnings
- Can be performed at any stage during the project creation process
- Detected errors/warnings trigger:
 - Indicator icons in the hierarchical structure
 - Clickable links within the error message that jump the user's view directly to the appropriate part of the proposal/program
- Also performed on the server side during submission to ensure that only valid projects can be submitted



Validation

- Provides a series of automated checks on the validity of

Description	Suggestion
No Principal Investigator specified	Select the top level Project node in the tree and fill in the Principal Investigator field
No documents found - you must at least add a Science Case to your	Select the proposal node in the Proposal tab and add your documents
Data rate too high	Contact your ARC for advice

- Detected errors/warnings trigger:
 - Indicator icons in the hierarchical structure
 - Clickable links within the error message that jump the user's view directly to the appropriate part of the proposal/program
- Also performed on the server side during submission to ensure that only valid projects can be submitted

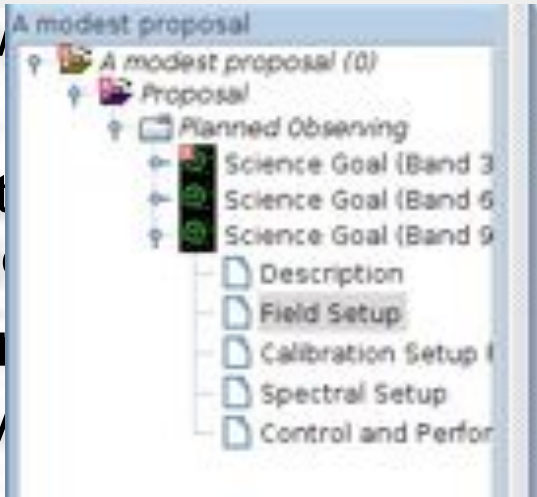


Validation

- Provides a series of automated checks on the validity of

Feedback	
Problems Information Log	
Description	Suggestion
No Principal Investigator specified	Select the top level Project node in the tree and fill in the Principal Investigator field
No documents found - you must at least add a Science Case to your	Select the proposal node in the Proposal tab and add your documents
Data rate too high	Contact your ARC for advice

- Detected errors/warnings
 - Indicator icons in the tree
 - Clickable links with icons that view directly to the problem
- Also performed on the proposal/program to ensure that only valid proposals are submitted



that jump the user's view to the proposal/program and prevent the proposal from being submitted to the system



Some other things

- Saving and Sharing
 - Export to local disk, import from local disk
 - You may use your own projects as “libraries” to copy from
- Some changeable user preferences
- Calibrator search can be used stand alone
- LO Setup tool for experimenting (*warning: expertise required*)



Help

- Contextual Help provided in the Overview panel
 - Step-by-step clickable walkthrough instructions, including links
 - Guides the PI through Phases I & II, as appropriate
- Additional help also provided via other means within the OT
 - Hover-over ToolTips
 - Searchable electronic copies of the complete user & reference manuals
 - Cookbook currently in development
 - In-form contextual help links into the reference manual
 - PDF versions of manuals



Help

- Co

- Ad

ALMA Observing Tool User Manual

Search Favourites

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BaseBand Configurations

In the panel *BaseBand Configurations* up to four baseband configurations can be defined. An overview of the upper part of this panel is provided in [Figure 8.10](#). A number of fields for specifying the basebands and their spectral windows are described below. More details can be obtained in the OT Reference Manual.

This panel contains a summary table of the baseband configurations: it lists the name, center rest frequency, data products and sideband separation, the LO2 frequency and the data rate for each of the basebands. Just above this is the [LO Setup Preferences](#) panel that can be used to calculate the LO frequencies. Depending on how many baseband configurations have been defined, the [LO Setup Preferences](#) subpanel can be used for optimising the position of the frequency band by adjusting the LO1 and LO2 settings. In the Sideband(s) to prioritise check boxes the user can indicate the priority for the USB and LSB. Below there are check boxes for each of the base bands in which the user can enter a weight between 0 and 100 to prioritise these base bands for calculating the LO1



Time Estimates and Summaries

- OT generates a PDF version of the proposal, containing a distillation of all the key details:
 - Headed by the basic proposal information, such as PI, proposal title, etc.
 - Incorporates the provided PDFs for science & technical cases, figures, tables, etc.
 - Includes a full technical summary, containing all of the proposed observations, and associated setups, target lists, etc.
 - Includes a total execution time estimate
 - Available to the PI as a routine part of the proposal generation/submission process



Proposal Submission



Proposal Submission: Overview

- Client/Server system: OT client + Submission Server
- Connection via https - secure
- Authorization required, PI username must be used
- Proposal must be valid - only warnings are acceptable.
- PDF receipt returned on successful submission, including tracking code
- May re-submit up to the deadline
- All submissions to Santiago
- Project finder interface to Archive



Proposal Submission: Overview

- Client/Server system
- Connection via http
- Authorization required
- Proposal must be complete
- PDF receipt returned including tracking
- May re-submit up to 3 times
- All submissions to ALMA
- Project finder interface

Congratulations!

Your project has been successfully submitted.

PI Name	Alan Bridger
Project Name	A simple test using 8_0_0
Project Code	2010.3.00797.S
Date Submitted	2010-11-19 01:51:46
Internal Project ID	uid://X22/X60/X1



ProjectFinder

Search for Projects

- all projects
- all my projects
- by PJ ALMA ID
- by Project Code
- by Project Name

Ignore Case
 Exact Match

Search

Found Projects

Project Name	Project Code	PI ALM	Creation Time	Status	Project ID	
TEST: Checking	2010.3.000...	abridger	2010-08-25 09...	Rejected	uid://X22/X1...	✓ Open
A simple test using...	2010.3.007...	abridger	2010-11-19 13...	Phase1Subm...	uid://X22/X6...	

2 project(s) found

Done



The Proposal Review Process takes place

(time passes...)

A night scene of a suspension bridge with fireworks exploding in the sky. The bridge is silhouetted against a dark sky filled with bright, colorful fireworks. The city lights are visible in the background.

Success!

(The proposal gets ALMA time)



Phase II



Phase II

- Approved proposals flagged in ASA as ready for Phase II; PI notified
- PI uses OT to retrieve successful proposal from ASA
 - Proposal Phase I content now read-only
 - Program tab in Project Structure tab now foregrounded; includes Phase II Science Goals
- Ideal Phase II case:
 - PI is happy with the Science Goals as initially presented at Phase II
 - PI hits “Generate SBs”, & SBs are automatically generated
 - PI is happy with resultant SBs
 - PI re-submits project to ASA, including Phase II SBs



Phase II

- Approved proposals flagged in ASA as ready for Phase II;

ProjectFinder

Search for Projects

all projects

all my projects

by PI ALMA ID

by Project Code

by Project Name

Leave settings untouched to improve search speed

Ignore Case

Exact Match

Search

Found Projects

Project Name	Project Code	PI ALMA ID	Creation Time	Status	Project ID	
TRIVIAL: hohoho	2010.3.00320.S	saigo	2010-09-03 12	Rejected	uid://X22/...	Open
TRIVIAL: hogehoge	2010.3.00302.S	saigo	2010-09-03 12	Rejected	uid://X22/...	
READ: Search for the Extremely High	2010.3.00207.S	saigo	2010-09-03 08	Approved	uid://X22/...	
TRIVIAL: hohoho	2010.3.00133.S	saigo	2010-09-02 19	Approved	uid://X22/...	
TRIVIAL: hogehoge	2010.3.00132.S	saigo	2010-09-02 19	Approved	uid://X22/...	
TRIVIAL: Massive night meal in OSF 4	2010.3.00063.T	saigo	2010-09-03 12	Approved	uid://X22/...	
TRIVIAL: Massive night meal in OSF3	2010.3.00050.T	saigo	2010-09-03 12	Rejected	uid://X22/...	
TRIVIAL: Massive night meal in OSF2	2010.3.00037.T	saigo	2010-09-03 12	Approved	uid://X22/...	Done

27 project(s) found



Phase II

- Approved pro

The screenshot shows the ALMA software interface. On the left, a search panel is visible with the following options:

- Search for Projects
- all projects
- all my projects
- by PJ ALMA ID: saigo
- by Project Code
- by Project Name

Below the search panel is a table of found projects:

Project Name
TRIVIAL: hohoho
TRIVIAL: hogehoge
READ: Search for the Extremely High
TRIVIAL: hohoho
TRIVIAL: hogehoge
TRIVIAL: Massive night meal in OSF 4
TRIVIAL: Massive night meal in OSF3
TRIVIAL: Massive night meal in OSF2

At the bottom of the search panel, it says "27 project(s) found".

In the center, a "Project Structure" tree is visible, showing a hierarchy of "Examples" and "Science" folders. A right-click context menu is open over the "Science" folder, with the following options:

- ALMA Calibrator Selection Tool...
- ALMA LO Configuration Tool...
- Sensitivity Calculator...
- Generate SBs from the Selected Goal
- Generate Phase II SBs from all the Science Goals**
- Generate Phase II SBs from all the Science Goals
- Generate a PDF of Whole Proposal
- Disable Edit Protect

On the right side of the screenshot, there are two text boxes providing instructions:

To create Science Goals select (right-click) menu.

To create Scheduling Block "ObsUnitSet" in the menus), choose "Add Scheduling Block".

All Scheduling Blocks must



Phase II: SchedBlock Details

- SB contains series of Observing Setups (“targets” - name may change)
- Targets are organised into Observing Groups
 - Only targets in a group are observed
 - Helps control order of observing
 - Group 1 is starting calibrators
 - Group 2 is science and frequent calibrators
- Target consists of field setup, spectral setup and observing parameters (“intents”)
- SB contains name of the observing script
- And scheduling information (required conditions etc)
- Obsunit set - connection to data processing



Phase II: Scheduling Details

Proposal Program

Examples for Time Estimates

- Science Goal (ngc1033) - generated
- Science Goal (ngc1068) - generated
- Science Goal (m11) - generated
- Science Goal (ngc253) - generated
- Description
- Field Setup
- Calibration Setup Parameters
- Spectral Setup
- Control and Performance Parameters
- ngc253-SI
 - ngc253[12mArray SB]
 - ngc253[12mArray SB]
 - Group 1 : Calibrators
 - Group 2 : Science
 - 7 Targets
 - Pointing calibrator virtual field
 - Amplitude calibrator virtual field
 - Delay calibrator virtual field
 - Bandpass calibrator virtual field
 - Phase calibrator virtual field
 - [R] ngc253 (Science)
 - ngc253 (Science)
 - Resources
 - 7 Field Sources
 - Primary: ngc253
 - Primary: ngc253
 - Pointing calibrator query
 - Amplitude calibrator query
 - Delay calibrator query De
 - Bandpass calibrator quee
 - Phase calibrator query Pt
 - 1 Instrument Setup
 - Setup for Cont(230.8692)
 - 6 Observing Parameters
 - ngc253 Params
 - PhaseCalParameters
 - PointingCalParameters
 - AmplitudeCalParameters
 - DelayCalParameters
 - BandpassCalParameters



Phase II: Validation and Submission

As for Phase I:

- Authorization required, PI username must be used
- Phase II program must be valid - only warnings are acceptable.
- May re-submit up to the deadline
- All submissions to Santiago



After Submission

Afterwards...

- JAO & ARCs verify SBs
- May iterate with PI
- SBs Made Ready for execution
- Track progress using the ALMA Science Archive



How does an SB “execute”?

- Actual run-time sequence is determined by the Control script
- This is an Observatory Standard Script
- Some control available in the SB via the populations of the Observing Groups...
- ...and cycle times for the calibrators



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The Atacama Large Millimeter/submillimeter Array (ALMA), an international astronomy facility, is a partnership of Europe, North America and East Asia in cooperation with the Republic of Chile. ALMA is funded in Europe by the European Organization for Astronomical Research in the Southern Hemisphere (ESO), in North America by the U.S. National Science Foundation (NSF) in cooperation with the National Research Council of Canada (NRC) and the National Science Council of Taiwan (NSC) and in East Asia by the National Institutes of Natural Sciences (NINS) of Japan in cooperation with the Academia Sinica (AS) in Taiwan. ALMA construction and operations are led on behalf of Europe by ESO, on behalf of North America by the National Radio Astronomy Observatory (NRAO), which is managed by Associated Universities, Inc. (AUI) and on behalf of East Asia by the National Astronomical Observatory of Japan (NAOJ). The Joint ALMA Observatory (JAO) provides the unified leadership and management of the construction, commissioning and operation of ALMA.