

Observation Preparation

Review of SSS Readiness for EVLA Shared Risk Observing, June 5, 2009



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Atacama Large Millimeter/submillimeter Array
Expanded Very Large Array
Robert C. Byrd Green Bank Telescope
Very Long Baseline Array



Introduction

This presentation:

- Define some terms
- Schematic of applications and data stores
- Screen captures from applications
- Brief demonstration

Terminology - Model

Source

Object on the celestial sphere.

Resource

A hardware configuration.

Hardware

Telescope electronics and back end instrumentation.

Project

Collection of related observations performed on a single telescope. Spawned from a proposal. A proposal could lead to several projects (usually one per telescope).

Program Block

A subdivision of project. One block for each configuration of a telescope.

Scheduling Block

A subdivision of program block. A continuous chunk of observing time. A program block might be split into multiple scheduling blocks if the desired amount of observing time cannot be performed all at once.

Scan

A subdivision of a scheduling block. The application of a resource to a source with specified intentions for a specified time.



Terminology - Applications

SCT

Source Catalog Tool. Browser-based application for maintaining catalogs of sources. Contains NRAO and user catalogs.

RCT

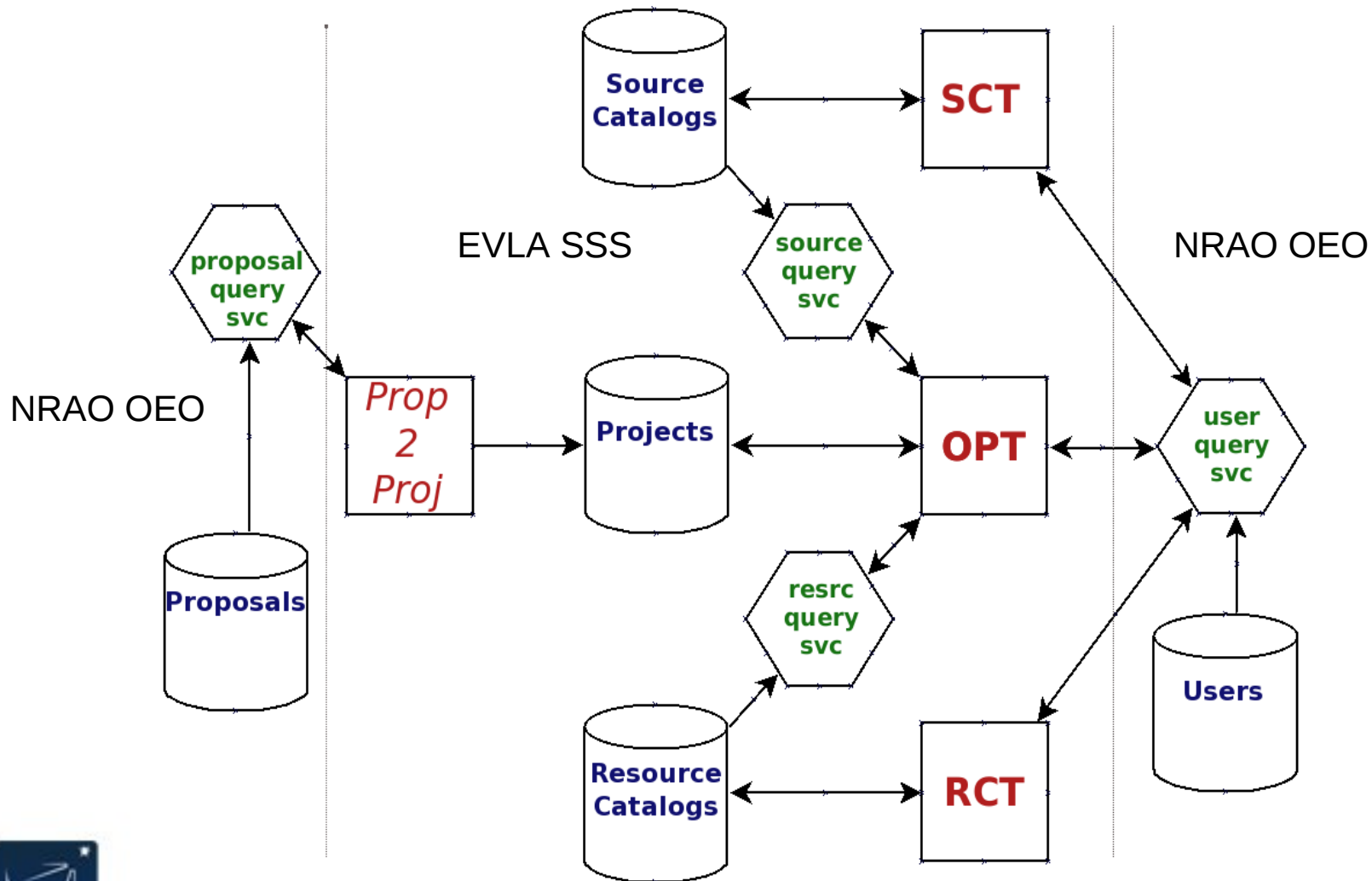
Resource Catalog Tool. Browser-based application for maintaining catalogs of hardware configurations. Contains NRAO and user catalogs.

OPT

Observation Preparation Tool. Browser-based application for configuring observations to be scheduled on a telescope.

The term “OPT” is sometimes used to refer to the specific application that allows users to set up a project, while at other times is used to refer to the combined OPT / SCT / RCT suite of related applications. When using this latter meaning, this presentation will use the term “OPT+”.

Applications & Data Stores



Source Catalog Tool

- Used for both observatory and personal catalogs.
 - Users have read-only access to observatory catalogs.
 - Users have no access to other users' catalogs.
- Supports text file import / export
 - Formats: XML, PST, (some work done on GBT formats)
 - Allows users to backup, share catalogs.
- Little changed since mid-2008
- Future features:
 - Ability to call up flux density history
 - Connection to archive for images
 - Graphical displays

File Edit Help
 NRAO > User Portal > Observation Preparation | Sources | Instrument Configurations

SOURCES IN 'Q BAND HIGH FLUX'

Select: All | None Show: 25 | 50 | 100 | 200 SELECT COORDINATE SYSTEM: Equatorial

	Name	Right Ascension	Declination	>>>
<input type="checkbox"/>	J0319+4130	03h 19m 48.160102s	+41d 30' 42.10305"	
<input type="checkbox"/>	J0359+5057	03h 59m 20.747262s	+50d 57' 50.16151"	
<input type="checkbox"/>	J0418+3801	04h 18m 21.277s	+38d 01' 35.80"	
<input type="checkbox"/>	J0532+0732	05h 32m 38.998531s	+07d 32' 43.34586"	
<input type="checkbox"/>	J0609-1542	06h 09m 40.949538s	-15d 42' 40.67264"	
<input type="checkbox"/>	J1229+0203	12h 29m 06.699729s	+02d 03' 08.59819"	
<input type="checkbox"/>	J1230+1223	12h 30m 49.423381s	+12d 23' 28.04393"	
<input type="checkbox"/>	J1256-0547	12h 56m 11.16656s	-05d 47' 21.52458"	
<input type="checkbox"/>	J1337-1257	13h 37m 39.78278s	-12d 57' 24.69323"	
<input type="checkbox"/>	J1415+1320	14h 15m 58.817499s	+13d 20' 23.7126"	
<input type="checkbox"/>	J1642+3948	16h 42m 58.809951s	+39d 48' 36.99395"	
<input type="checkbox"/>	J1733-1304	17h 33m 02.70579s	-13d 04' 49.54823"	
<input type="checkbox"/>	J1743-0350	17h 43m 58.856137s	-03d 50' 04.61668"	

Advanced Search
 Search Results
 1. Search Results
 2. Search Results

Dave's Fave
 Q Band High Flux
 GBT
 ATCA
 VLA
 RA Groups
 Dec Groups
 3C
 AW574
 CJ2
 GVAR
 JVAS
 USNO
 VERA

Clicking this icon shows details of this source.

Catalogs and Groupings
 Black catalogs belong to users, are private, and may be modified.
 Red catalogs are public and may not be modified.

SCT
 Main
 Page

Resource Catalog Tool

- Original intent: support only WIDAR
 - Agreed to support VLA correlator for Ka band
 - Has been used for real science
- All future work will be to support WIDAR
 - Starting with user interface for experts
 - Experts can fine tune, but will not get much guidance
 - For OSRO we will have preconfigured standard setups
 - Users will be able to customize tuning, but little else
- Ultimate plan for non-experts: allow observer to enter science-oriented criteria and have software auto-configure WIDAR
 - Users can choose to adjust configuration

File Edit Help

NRAO > [User Portal](#) > [Observation Preparation](#) | [Sources](#) | [Instrument Configurations](#)

My Catalog **Yellow dot indicates unsaved data in this catalog.**

NRAO defaults

- Pointing Scans
- VLA 4 band
- VLA P band
- VLA L band continuum
- VLA L band line
- VLA C band
- VLA X band** ← **Currently selected group. The configurations above are those belonging to this group.**
- VLA U (Ku) band
- VLA K band
- EVLA Ka (A) band
- VLA Q band

WIDAR defaults

- Nothing yet

INSTRUMENT CONFIGURATIONS IN 'VLA X BAND'

Select: All | None Show: 25 | 50 | 100 | 200

	Name	Telescope	Band	Back End	Comments
<input type="checkbox"/>	XX Continuum	EVLA	X	VLA Correlator	Default X-band continuum
<input type="checkbox"/>	XX Pointing	EVLA	X	VLA Correlator	Pointing in X-band (Primary)

RCT Main Page

My Catalog
 NRAO defaults
 WIDAR defaults

[Return to 'My Catalog'](#)

Name	Telescope	Band	Back End	Comments
C-band Continuum	EVLA	C (4.0GHz - 8.0GHz) 3-DB: 3.8GHz - 8.2GHz	VLA Correlator	

INTEGRATION TIME

CORRELATOR MODE

BW Code	Bandwidth	AC	BD
0	50.000MHz	<input checked="" type="radio"/>	<input checked="" type="radio"/>
1	25.000MHz	<input type="radio"/>	<input type="radio"/>
2	12.500MHz	<input type="radio"/>	<input type="radio"/>
3	6.250MHz	<input type="radio"/>	<input type="radio"/>
4	3.125MHz	<input type="radio"/>	<input type="radio"/>
5	1.563MHz	<input type="radio"/>	<input type="radio"/>
6	781.250kHz	<input type="radio"/>	<input type="radio"/>
7	195.313kHz	<input type="radio"/>	<input type="radio"/>

FREQUENCY RANGE

IF AC

REST FREQUENCY:

CENTRAL SKY FREQUENCY:

SKY FREQUENCY RANGE: 4.375GHz - 4.425GHz

IF BD

REST FREQUENCY:

CENTRAL SKY FREQUENCY:

RCT
 VLA
 Configuration



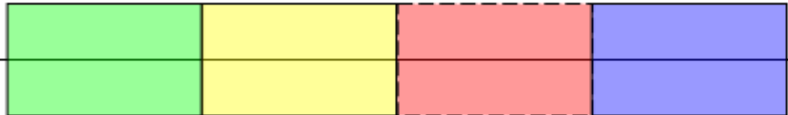
[Return to 'My Catalog'](#)

Name	Telescope	Band	Back End	Comments
WIDAR Ka	EVLA	Ka (26.5GHz - 40.0GHz) 1-DB: 26.0GHz - 40.0GHz 3-DB: 25.0GHz - 41.0GHz	WIDAR	

Graphical View
Basic Spectral Line Setup
Advanced Antenna Controls
Adv. Correlator Config

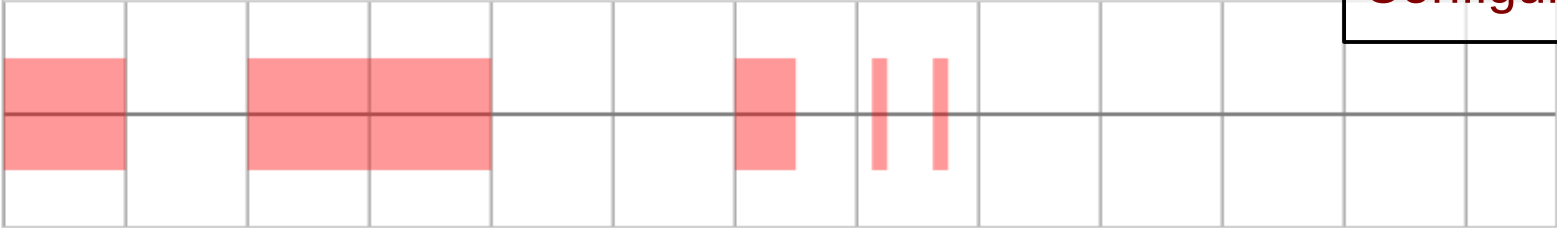
Receiver Band:

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Frequency: 28080MHz
Baseband: A1/C1

📄 📄 🔍 🔍 🔍 🚫



Frequency: 878MHz

RCT
WIDAR
Configuration



Observation Preparation Tool

- Available now to observers. Cannot use JObserve for extended tuning ranges of EVLA receivers.
- Has received some positive comments from first users.
 - Still has long way to go to be a finished product.
 - Original requirements and current users' wish-list as guides.
 - Usability will also be addressed.
 - Too much mouse clicking needed for frequent operations.
- The only feature changes *required* for OSRO / RSRO will be in area of Doppler tracking.
 - Most of the WIDAR variability is encapsulated in RCT and in the model.

File Edit Help

NRAO > [User Portal](#) > [Observation Preparation](#) | [Sources](#) | [Instrument Configurations](#)

AR6789

- VLA D Cfg
 - Main Block, 0:21:21
 - STD: J0001+1914
 - STD: J0006-0004
 - Tip Block, 0:06:37
 - TIP: tip
- QuickScan Test
- Import Test, Mar 02
- Import Test of New Proj
- CND - altered
- Tip Test
- Small
- Copy of XML Test - Imported
- Of the Project
- Ka spectral line Dec 29, 08, multi band
- Tiny
- XML Test

PROJECT DETAILS

TITLE	AR6789	STATUS	Not Ready To Be Scheduled
PROJECT CODE	Test536_7	PROPOSAL CODE	[None]
TYPE	Simple	TELESCOPE	EVLA
ALLOCATED TIME	0.0	TIME USED	0.0

Components of a single project.

User's list of projects.

Details screen for current selection in the project tree.

OPT Main Page

- Saved Project 'AR6789'

← **Message area.** →

AR6789

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Scheduling Block Details

Scheduling Block Summary

Scheduling Block Submission

SCHEDULING BLOCK DETAILS

GENERATED ID: 24930

NAME: STATUS: Not Ready To Be Scheduled

COUNT: COMPLETED: 0

TOTAL TIME: 0:21:21 TIME PER EXECUTION: 0:21:33

SCHEDULE TYPE:

LST START RANGE:

START AFTER DATE (OPTIONAL):

ASSUMED ANTENNA STARTING POSITION

COORDINATE SYSTEM: AZIMUTH:

ELEVATION:

SCHEDULING CONSTRAINTS/CONDITIONS

Specify Constraint	Name	Constraint Value
<input type="checkbox"/>	MAX API	
<input type="checkbox"/>	MAX WIND SPEED	

COMMENTS TO THE OPERATOR

OPT
Scheduling
Block
Details



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Overview | Comments

SCAN DETAILS

Name	Scan Mode	Antenna Wrap	Apply Last Reference Pointing	Allow Over The Top
J0006-0004	Standard Observing	No Preference	<input type="checkbox"/>	<input type="checkbox"/>

Target Source	Hardware Setup	Scan Timing	Intents
J0006-0004 RA: 00h 06m 22.6338s DEC: -00d 04' 24.086" Change	Wide Rest Freq Range Receiver: Ka-band AC Freq: 26.5GHz BD Freq: 39.5GHz Change <input type="checkbox"/> Keep Previous Conf.	On Source (LST) 0:15:00.000	<input checked="" type="checkbox"/> Observe Target <input type="checkbox"/> Calibrate Complex Gain <input type="checkbox"/> Calibrate Flux Density Scale <input type="checkbox"/> Calibrate Bandpass More >>>

Doppler Tracking

IF	Use This Scan's Source	Velocity	Position
AC	<input type="checkbox"/>	Rest Frame: Barycentric Convention: Radio Velocity Value: 500.0 Velocity Units: km/s	RA: 00h 01m 08.621563s Dec: +19d 14' 33.80186"

**OPT
Scan
Details**



[Brief demonstration of OPT+ here.]

Links

- Observation Preparation Tool (OPT)
 - Test: <https://webtest.aoc.nrao.edu/opt>
 - Production: <https://e2e.nrao.edu/opt>
- Source Catalog Tool (SCT)
 - Test: <https://webtest.aoc.nrao.edu/sct>
 - Production: <https://e2e.nrao.edu/sct>

End of Presentation