#### The OSRO, ECSO and RSRO Programs: Balancing Priorities



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EVLA

# Genesis of OSRO, ECSO and RSRO

- EVLA project has an II-year schedule
  - Impossible to cease operations for any significant period of time
  - Observations were shared risk from the start (easily forgotten)
- VLA represented the apex of a 30-year optimization process
  - Defined community expectations for the initial minimum acceptable standard of performance for the EVLA
- Staffing plan to accomplish delivery of all EVLA performance capabilities was not compatible with staffing resources
- EVLA Construction
  - Until 2010, perturbations on VLA operations were minimal
  - Not an accident, not zero-cost: Carefully planned and managed to install, test and deliver new subsystems in parallel with existing ones to



the maximum extent possible

#### EVLA Becomes Operational: March 2010

- Commissioning WIDAR requires both
  - Installing and verifying the correlator hardware and firmware, and its interaction with the complex software system in which it is embedded
- Thus, impact of WIDAR delivery on operations was known to be significant
  - Staged delivery and testing of correlator through PTC, WIDAR-0 partly mitigated impact
  - However, these tests indicated that scale-related and system-coupling issues were going to pose challenges
  - Shut down of <u>at least</u> 7 weeks would be required
- EVLA Commissioning/Early Science Goals:
  - Maintain and enhance support for peer-reviewed early science while commissioning increasingly powerful and sophisticated WIDAR modes
  - Deliver the broadest set of new capabilities to the user community in the shortest possible time  $\rightarrow$  Three observing programs OSRO, RSRO, ECSO established

**EVLA** 

#### **Observing with the EVLA: 2010-2012**

- Observing is one of three activities now being carried out:
  - Observing (data in archive)
  - Commissioning tests (data in archive)
  - Engineering/software work (expanding capabilities)
- These activities are balanced as needed
- All observing is shared risk
- All observing is dynamically scheduled (with a few exceptions); not all projects will end up with time on the instrument
- All regular observing proposals are reviewed by PSC



# Commissioning: OSRO Status EVLA







#### **OSRO** details

- Concept: Insure robust, end-to-end data delivery to the user community as total bandwidth grows by ~order of magnitude jumps; access to WIDAR through simple, verified set ups
- Configurations:
  - Traditional VLA configuration cycle was reversed in March 2010
  - EVLA configurations now run  $D \rightarrow C \rightarrow B \rightarrow A$ , beginning with current D insures smooth increase of data rates and volumes
- Capability growth:
  - 256 MHz total BW,TI 2010 through T2 2011
  - 2 GHz total BW,T3 2011 through T3 2012
  - 8 GHz total BW,T3 2012-
  - [Recirculation, special modes, 2013— (full operations)]





## **OSRO** Assessment

- Program has been a success thus far for 4 months
- However, the very high success rate has been due to a confluence of factors unlikely to repeat (e.g., inability to do 2 GHz observations until recently)
- Continued success as the data sets grow larger will depend on continued attention to planned development of supporting infrastructure and software



# **EVLA**

## RSRO

- Concept: Offer expert users the opportunity to make use of available extended system capabilities (e.g., wide bandwidths, phased array) for early science in return for resident commissioning help
- Residency:
  - Minimum of one month of resident commissioning effort required for every 20 hours of time allocated; minimum residency of 3 months
  - RSRO stay may take place before the observations, but observers should also be present for observations
  - Resident personnel will work under NRAO management to provide defined deliverables
  - A collaborator on the EVLA staff will not satisfy the residency requirement
  - Graduate students will not (in general) satisfy the residency requirement
- NRAO provides accommodations; cannot offer salary support
- Time available:
  - Up to 25% of the time available for astronomy will go to RSRO programs (~1200 hours/year)





## **RSRO Proposals**

- Long (>200 hrs) or standard proposals are acceptable
- RSRO proposals must have three parts:
  - I. Scientific justification: Peer reviewed under NRAO's time allocation process
  - 2. Technical section: Describes the expertise and personnel proposed for residency. Reviewed by NRAO staff
  - 3. Budget: Specifies the level and nature of any support requested from NRAO
- Response of the community to RSRO has been gratifying thus far:
  - 57 RSRO proposals received since October 2009
  - Roughly half granted telescope time
  - An average of 7 RSRO observers have been in residence in Socorro since the program began
- We will support our obligations to RSRO proposers (*cf.* extension of Darray) as best we can





#### **RSRO** Assessment

- RSRO has only recently begun (~ca. January 2010)
- The concept is new and temporary but it we believe we must assess how we are doing and look for ways to:
  - Improve the efficiency of the program we may have started too early (though remember, our obligation to provide data does not end with the departure of resident participants)
  - Optimize the match of commissioning needs with visitor skills rebalance the proposal selection criteria?
  - Strengthen management oversight of RSRO activities and strengthen ownership of visitors – This was a going-in concern and requires personnel resources from an already thinly-spread staff. Commissioning teams are a mechanism, but do require strong leadership <u>and</u> a basically functioning system
  - Maintain sustainability Too many large RSRO programs? Rebalance with new?
- Exit interviews with RSRO personnel have been useful and we intend to continue these





#### ECSO

- Concept:
  - NRAO EVLA commissioning staff are in the best position to test and push the EVLA capabilities
  - EVLA commissioning staff should have access to the same capabilities as those available through the RSRO program
- Up to 500 hours per year will be set aside for peer-reviewed science programs of EVLA commissioning staff
- Also shared risk





#### Summary and PASEO Questions (I)

#### • <u>Summary:</u>

- The EVLA is not finished
- <u>All</u> observing with the instrument continues to be on a shared risk basis
- Until at least 2013 EVLA will be an instrument in commissioning, for which we endeavor to provide the most stable end-to-end acquisition data under NRAO's peer-review system under the OSRO program
- Not all EVLA capabilities can be available at the beginning of 2013 (e.g., pulsar gating); they will be implemented as soon as possible on a prioritized basis. <u>RSRO accelerates the delivery of these capabilities and accelerates the delivery of science from the instrument</u>
- Exploratory science, targets of opportunity and triggered science will continue to be supported under OSRO





## **PASEO Questions (II)**

- Opportunities for non-radio astronomers to get involved in EVLA early science:
  - > OSRO delivers robust, user-supported access to the EVLA
  - RSRO science is generally not an efficient avenue for non-radio astronomers; expertise and residency required because RSRO capabilities are assumed to be in flux
- EVLA scheduling remains almost 100% dynamic, aimed at balancing peerreviewed science priorities, weather conditions with frequency, etc.
- We do not guarantee observations
  - However, we have a long-standing policy to work with observers to obtain their data, especially where the observations are needed for doctoral dissertations or where the observatory may have made errors
- Large programs (>200 hours) welcome, but should be justified, given evolving bandwidth and other system capabilities



Director's discretionary time: the process is evolving